

**EFFECT OF NON PHARMACOLOGICAL STRATEGIES  
ON LABOR OUTCOMES OF PARTURIENTS AT  
SELECTED HOSPITALS, METTUPALAYAM**

**REG. NO. 30101421**

A Dissertation Submitted to  
**The Tamilnadu Dr. M.G.R. Medical University,**  
Chennai-32.

In Partial Fulfillment of the Requirement for the

Award of the Degree of

**MASTER OF SCIENCE IN NURSING**

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### **Abstract**

A quasi experimental study was carried out to identify the effects of Non Pharmacological strategies on the labor outcomes of the parturients. Pre testPost test with control group design was used among 24 laboring women who were purposively sampled and randomly assigned to the experimental and control group. Experimental group received the Non Pharmacological Strategies while the control group was monitored along with the routine nursing care. The selected labor outcomes were assessed using the Sturrock's Labor Coping Scale (1972) and Perception of birth scale (Marut& Mercer, 1979). Both descriptive and inferential statistical methods were used. 't'- test results demonstrated that the experimental group mothers had higher labor coping ability using the Non Pharmacological strategies. The mean values of the mother's perception indicated that the experimental group had higher mean satisfaction scores when compared with their counterparts in the control group.

**Effect of Non Pharmacological Strategies on Labor Outcomes among parturients  
at selected Hospitals, Mettupalayam**

Child birth is a natural and physiological process specially designed to be executed by a woman's body and is commonly referred as labor. As the name suggests, it is one such process which commands expenditure of tremendous energy. Labor pain has been proven to be multi dimensional in nature and is a woman centered concept. Although pain during labor is a universal phenomenon, it is a major factor which affects the process of delivery and its outcomes. A retrospective review of anesthesia records was carried out among 4493 parturients with the hypothesis that dystocia causes severe labor pain and hence more epidural medication is required to maintain comfort. The participants have received a small dose of epidural analgesia. The findings revealed that women with cesarean deliveries appeared to have more pain; hence it is suggested that the degree of labor pain may be a confounding factor affecting labor outcomes ( Hess, Pratt, Soni, Sarna & Oriol, 2000).

A variety of factors which affect the intensity of pain experienced by women in labor includes perception, tolerance, coping mechanisms, personal meaning, expression, communication, actual characteristics and environment of pain. It has been found that fears related to the labor process and of the possible perineal injury are the main reasons for women to request for caesarean section (Kolas, Hofoss & Daltveit, 2003; Nerum, Halvorsen, Sorlie, & Oian, 2006). Medicalisation of the childbirth has been expanding the pharmacological options for pain relief, but not without its own handicaps.



A retrospective comparative chart of 233 primiparous deliveries was reviewed to examine the relationship between the method of labor pain management and birth outcomes. The group assignment was based on the method of pain control used- non-narcotic, narcotic, or epidural. The group which received epidural analgesia was associated with poor labor outcomes in terms of increased rates of instrumental and cesarean delivery, increased need for use of synthetic oxytocin, longer second stage of labor, lower Apgar scores when compared with other groups. The same group of women who received epidurals was less satisfied with their childbirth experience, an essential component of labor outcomes (Bennett, Hewson, Booker & Holliday, 1985).

Though concepts of painless vaginal delivery have emerged, the woman's preference is contradictory. Davenport & Boylan (1974) stated that the positive experience of childbirth is related to a woman's desire to be an active participant. Brewin & Bradley (1980) have identified that pain-free childbirth has no guarantee that a woman will have a satisfying experience. Thus, midwives are usually posed with the challenge of bridging the delicate balance of painful and painless labor and yet providing a satisfying experience. In addition to satisfaction, the care rendered is expected to be safe, skilled, sensitive, cost effective and accessible to all levels of the community. Evidences also suggest that no single method is universally effective in coping with labor pain. Therefore assessing the efficacy of strategically formulated non pharmacological interventions by midwives is crucial to provide woman centered and competent care. Mander (1998) insisted that midwives should have control over pain rather than eradicating it during labor. These interventions unlike the pharmacological measures are directed towards keeping the mother active throughout labor, making the experience better.

### 1.1. NEED FOR THE STUDY

The interventions for labor pain relief calls for a holistic approach to achieve better labor outcomes in terms of physiological indicators of both mother and the newborn along with the satisfaction of the experience.

An international study was aimed at assessing the efficacy of the non-pharmacological strategies such as respiratory exercises, muscle relaxation, lumbosacral region massage and showers for pain relief during active labor phase by using a visual analogue scale was conducted. A total of 30 pregnant women participated in the study. The findings demonstrated that these strategies were effective in the three stages of the active phase of labor - acceleration, maximum slope and deceleration - showing pain reduction among the parturients. This confirmed the appropriateness of the interventions during labor (Davim, Torres & Melo, 2007).

An interventional clinical trial with pre test- post test design was conducted in Natal, Brazil to determine the effectiveness of non-pharmacological strategies in relieving labor pain among 100 parturients. They were provided breathing exercises, muscle relaxation, lumbo sacral massage and showers which were organized into Natal Non pharmacological strategies. The visual analogue scale ratings revealed a significant difference in pain relief after using non-pharmacological strategies concluding that pain got reduced though the cervical dilation increased. Among the participants, 15 percent did not receive any medications (Davim, Torres & Melo, 2009).

These studies support the holistic approach while caring the laboring women for meeting their pain relief needs and also the much required continuous support. Considering the feasibility of the selected settings the shower strategy was replaced with ice massage on acupressure point based on a retrospective study conducted among 46 women. The participants rated the non pharmacological pain relief techniques that were often used by them and the effectiveness of the chosen techniques. Breathing techniques, relaxation, acupressure and massage were found to be the most effective among the ten methods rated (Brown, Douglas & Flood, 2001).

## **1.2.STATEMENT OF THE PROBLEM**

EFFECT OF NON PHARMACOLOGICAL STRATEGIES ON LABOR OUTCOMES OF PARTURIENTS AT SELECTED HOSPITALS, METTUPALAYAM

## **1.3. OBJECTIVES**

- 1.3.1. To assess the parturient mothers during active phase of first stage of labor.
- 1.3.2. Application of Non Pharmacological Strategies during active and transition phases of first stage of labor.
- 1.3.3. To assess the labor outcomes among mothers after application of Non pharmacological strategies.

## **1.4. OPERATIONAL DEFINITIONS**

### **1.4.1. Parturient mothers**

Mothers in active phase of first stage of labor who fulfill the inclusion criteria.

### **1.4.2. Non Pharmacological Strategies**

Non pharmacological strategies are provided during the active and transition phase of first stage of labor. Strategy I was provided during the active phase of first stage of labor. The non pharmacological components in the first strategy included respiratory exercises, muscle relaxation and lumbo sacral massage. During the transition phase, Strategy II, ice massage is applied on the acupressure point, LI4.

### **1.4.3. Labor outcomes**

These are the responses of the parturients in terms of coping, maternal and fetal outcomes and satisfaction of their birth experience. Coping scores are rated based on behavioural responses using Sturrock's Labor Coping Scale. Maternal and fetal outcomes are the selected outcomes measures by the researcher in the second, third and fourth stages of labor. Satisfaction is assessed based on the five point likert ratings of Perception of Birth scale by Marut and Mercer(1979).

## **1.5. ASSUMPTIONS**

1.5.1. Parturients require strategies for better coping of labor pain which is multidimensional in nature.

1.5.2. Parturients experience difficulties in coping with pain during labor which are manifested behaviorally.

1.5.3. Non Pharmacological Strategies help in attaining better labor outcomes in terms of coping with pain, maternal and fetal outcomes and thereby increase the satisfaction of the childbirth experience.

## **1.6.CONCEPTUAL FRAMEWORK**

Conceptual framework acts like a map that gives coherence to empirical theory. They are used in research to outline the possible courses of action or to present a preferred approach to an idea or thought. They are developed in nursing research studies primarily to help, to define and to link ideas when performing studies that involve a number of intricate concepts. Through the use of nursing models and frameworks, knowledge gained from nursing research can be more readily disseminated into nursing practice

Widen Bach's helping art clinical nursing theory (1964) was modified and adapted as the conceptual framework for this study. The research process was carried out based on the three components of nursing care namely identification, ministration and validation.

### **1.6.1. Identification**

Parturients who would give consent for participating in the research will be screened for the inclusion criteria. Data on the demographics and the obstetrical profile will be collected using the questionnaire. Partogram will be monitored in order to initiate the intervention during the active phase of first stage of labor. Since the initiation of the intervention the labor coping will be measured using the Sturrock's Labor coping scale.

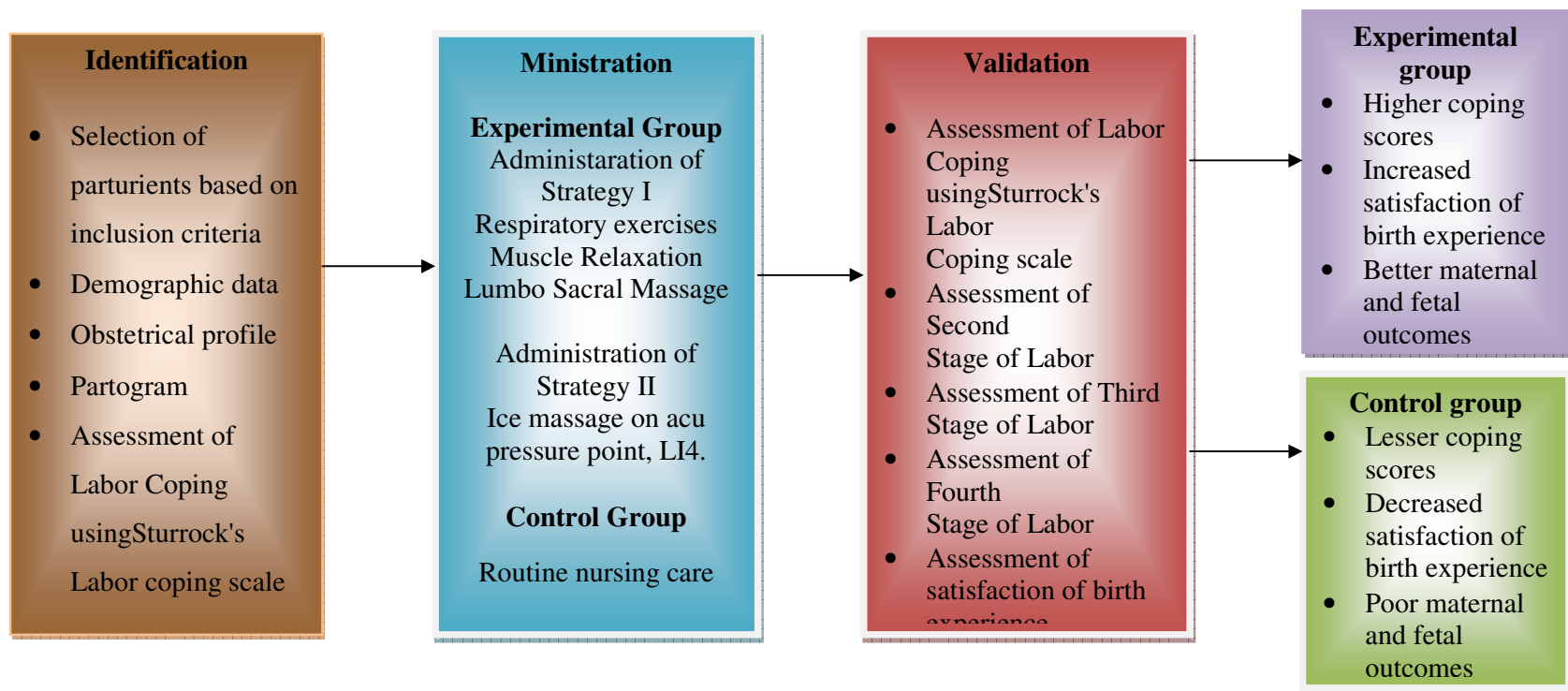
### **1.6.2. Ministration**

The researcher will randomly assign the parturients to the experimental and control groups. The experimental group would receive the Non Pharmacological strategies. Strategy I includes the interventions respiratory exercises, muscle relaxation and lumbo sacral massage. Each component of the Strategy I will be administrated for a set of five consecutive uterine contractions. Strategy II is the administration of ice massage on acu pressure point, LI4. The control group receives routine nursing care. An ongoing assessment was undertaken for both the groups.

### **1.6.3. Validation**

For both the groups, assessment was done before and after each intervention using Sturrock's Labor coping scale for intervention. Assessment of the physiological parameters for second, third and fourth stage of labor was performed using the tool. During the first 24hours after birth, mothers were interviewed regarding the satisfaction of the birth experience using the perception of Birth experience by Marut and Mercer. The labor outcomes were interpreted based on the labor coping scores and satisfaction of the birth experience of the participants.

**FIG. 1.1.CONCEPTUAL FRAMEWORK ON MODIFIED WIDEN BACH'S HELPING ART OF CLINICAL NURSING THEORY (1964)**



Source: Wesely (1994)

### **1.7.PROJECTED OUTCOME**

Practice of Non Pharmacological Strategies during the first stage of labor will enhance the parturient's coping during the first stage of labor, influence the maternal and fetal indicators and better satisfaction of the birth experience, thus promoting the labor outcomes.



## **REVIEW OF LITERATURE**

This chapter discusses the review of scholarly articles and research studies that are relevant to the present study. Reviewed literatures are briefed under the following headings: labor pain management, non pharmacological methods, breathing techniques, touch and massage, relaxation techniques, acupressure and acupuncture, pain management strategies, satisfaction of child birth experience and continuous support

### **2.1. LITERATURERELATED TO LABOR PAIN MANAGEMENT**

A prospective study was carried out among a convenient sample of 50 healthy primiparas and 88 healthy multiparas to determine the influence of background factors, emotional feelings and mothers expectations on pain intensity during labor and if there exists a difference among primi and multiparas in these factors. Demographic data and pain intensity was measured during three different phases of labor using Visual Analogue Scale and Pain-o-meter. Parity, younger age, less education, more menstrual problems, history of abortion, unstable emotional feelings, unrealistic expectations of pain and discomfort, more pain relieving drugs during labor and delivery, and a mate with negative or indifferent feelings towards the pregnancy were correlated with more emotional feelings towards pregnancy and higher intensity of in-labor pain (Fridh, Kopare, Johansson & Norvell, 1988).

The relationship between pain and cognitive activity during latent, mid-active and transition phases of labor among 115 nulliparous women was examined. Higher levels of pain during latent phase of labor were predictive of longer latent and active phases of labor. Distress-related thoughts during latent period were predictive of

longer latent, active and second-stage of labor. Majority (68.4%) of women reported "horrible" or "excruciating" pain required instrumental delivery. Women in "distress related" cognitive group had 2.6 times incidence of instrumental delivery, five times incidence of abnormal fetal heart rate patterns and four times the requirement for pediatric assistance for the neonate than subjects in the coping group (Wuitchik, Bakal & Lipshitz, 1989).

A study was conducted to define factors affecting the ability of medical staff to estimate pain levels during labor among 255 consecutive women. The parturients and care givers rated pain level using a visual analog scale. Half of the women's (50.6%) level of pain was estimated correctly by the caregivers, while similar proportions of women had their pain level overestimated (24.3%) and underestimated (25.1%) by the caregivers. Although the secular medical staff could properly estimate the pain levels of most patients (52.3%), the labor pain of 44% of the religious parturients was underestimated (Sheiner, Sheiner, Hershkovitz, Mazor, Katz & Shoham, 2000).

A quasi experimental study was carried out to determine the effect of integrated pain management program on labor pain, duration of first stage of labor and childbirth experience among 60 primi parous women. The findings revealed that the experimental group had lower mean pain scores during active and transition phases of first stage of labor and shorter duration of labor (Promrak, 2004).

A National study was conducted in Sweden among 2482 laboring women irrespective of the nature of termination, to investigate the association between epidural analgesia and other forms of pain relief and memory of pain at two months

and one year after birth. Three postal questionnaires were used at the stipulated periods. Primi mothers with epidural analgesia had greater difficulty in forgetting pain ten months later when compared with women who had similar pain scores at two months of post partum period (Waldenstrom&Irestedt, 2006).

The content of fear related to childbirth was identified from the descriptions of 308 women and 194 men under following categories: labor and delivery process, health and life of baby, health and life of the woman, own capabilities and reactions, partner's capabilities, reactions and the professionals competence and behavior. The health and life of baby was the most frequent fears among men. Men with intense fear frequently expressed their concern for the health and life of woman. Fears related to own capabilities and reactions, the labor and delivery process were prevalent among women with intense fear. Both women and men had fears about not receiving competent and dignified medical care. This study suggests that childbirth-related fear is located within the health care system itself (Eriksson, Westman &Hamberg, 2006).

A Canadian study that rated various pain syndromes found that mean labor pain scores expressed by laboring women were higher in both nulliparous and multiparous women than the scores recorded by out-patients with sciatic pain, toothache and fracture pain. The factors associated with increased pain were first delivery, history of dysmenorrhea, fear of pain and religious practices. Factors related to diminishing pain included childbirth preparation classes, complications during pregnancy, wish to breast feed, high socio-economic status and older age (Tournaire &Yonneau, 2007).

The epidural analgesia is considered as the most common approach to labor pain relief in U.S. It is the only pain relief method that can completely abolish pain, but also has a high profile of adverse effects, both minor and major (Leighton & Halpern, 2002).

## **2.2.**

### **LITERATURE RELATED TO NON PHARMACOLOGICAL METHODS**

Women experience pain related to labor differently due to the influence of many confounding factors. The concept of a pain “neuromatrix” suggests that perception of pain is simultaneously modulated by multiple influences hence provides an explanation why selected nonpharmacologic methods of pain relief can be quite effective for the pain relief of the laboring woman (Melzack, 1984).

Simkin, states in her review that non pharmacological methods as simple, effective, low-cost methods to relieve labor pain that could be carried out by nurses, midwives or physicians. They have the benefits of quicker labor progress, capable of diminishing painful stimulus at the source, providing alternate stimuli to inhibit pain awareness, reduction in side effects of medications and increased patient satisfaction. These methods are affordable and reduce the woman's negative reaction to pain (Simkin, 1995).

A retrospective, descriptive survey among 46 women rated the non pharmacological painrelief techniques that were often used by laboring women based on the effectiveness of chosen techniques. Breathing techniques, relaxation, acupressure and massage were found to be the most effective among the ten methods rated (Sylvia, Douglas & Flood, 2001).

A systematic review was conducted to assess the safety and efficacy of the best studied techniques for labor pain relief. Five comfort measures namely continuous labor support, bath, touch and massage, maternal movement and positioning, and intra dermal water blocks for back pain relief were selected for review. The critical evaluation of controlled studies indicate that all five may be effective in reducing labor pain and improving other obstetric outcomes and are safe when used appropriately (Simkin&Hara,2002).

A quality improvement research project was conducted to determine whether non-pharmacological interventions were adequate in managing labor pain. The Coalition for Improving Maternity Services guideline was adopted and implemented at Lampang Hospital for 90 laboring women. The findings revealed that 94% of the women in latent phase and 85% of women during active phase were satisfied with non pharmacological pain management of first stage of labor. The use of analgesics before the implementation of the guidelines was 42% which reduced to 15 % after the use of guideline. The study recommended the use of family member support to compensate for the limited staff number (Wachiraratanakornkul, Kaewsuriya,Jongpoo, Boonyoohong, Komepala & Naunboonruang, 2010).

Mathew conducted a quasi-experimental study among parturients to assess the effect of abdominal effleurage on labor pain during first stage of labor at Indore, India. The results demonstrated that the experimental group mothers who practiced abdominal effleurage had significantly lower pain scores though there was a relatively steady increase in pain intensity level as labor progressed (Mathew, 2009).

A randomized controlled trial conducted among 180 expectant mothers examined the effectiveness of a birth ball exercise programme during childbirth by measuring childbirth self-efficacy and childbirth pain. The programme included a 26-page booklet, a 19-minute videotape, provision of a birth ball for home practice with periodic follow-ups during prenatal checks. Both the experimental and control groups received standard nursing and midwifery care from the hospital staff nurses during pregnancy and childbirth. The tools used were Childbirth Self-efficacy Inventory, and short form of the McGill Pain Questionnaire. The findings supported the fact that the birth ball exercises caused improvements in childbirth self-efficacy and pain. The experimental group mothers experienced shorter first-stage, lesser need for epidural analgesia and fewer caesarean deliveries when compared with the control group (Gau, Chang, Tian & Lin, 2010).

A survey of women in United States in 2005 found that 49 percent of the respondents used breathing techniques, and of those, 77% rated them as "very" or "somewhat" helpful, while 22% rated them as "not very helpful" or "not helpful at all". This contradictory finding reflects the differences in the quality of the teaching received by the women. A survey of British women found that 88 % of women who reported using relaxation techniques found them to be "good" or "very good" (Simkin & Klein, 2004).

### **2.3. LITERATURE RELATED TO BREATHING TECHNIQUES**

An investigation on effectiveness of coping strategies taught in childbirth education classes for nulliparous women was undertaken by Worthington and his associates. The findings revealed that in the first experiment, structured breathing was

more effective than normal breathing. Effleurage was less helpful than no effleurage. Practice of these measures under stress was better than either imaginal practice or no practice. In the second experiment a combination of structured breathing and attention focal points was much better than normal breathing. These methods were best performed when coached than without coaching. The combination of structured breathing, attention focal points and coaching produced the best coping (Worthington, Martin & Shumate, 1982).

A study was conducted for determining the efficiency of different pain relief methods after two months of delivery. The respondents have stated that epidural analgesia was the most effective pharmacological method. The non pharmacological methods studied included were acupuncture, TENS, sterile water injections, shower/bath and psycho prophylaxis. The 14% of the participants who used psycho prophylaxis stated that the method was as effective as Entonox and pethidin during labor (Waldenstrom & Irestedt, 2006).

## **2.4. LITERATURE RELATED TO TOUCH AND MASSAGE**

A clinical trial among 90 women in labor was conducted to identify the effect of therapeutic touch. It was found that the experimental group who were given 5 to 10 seconds of reassuring touch each time when the woman expressed anxiety during a 30-minute period during transition phase of first stage of labor had a significant decrease in their blood pressure and the number of expressions of anxiety during labor and post partum period (Sommer, 1979).

A randomized clinical trial was described in the systematic review with 28 participants who received either usual care or massage of head, back, hands and feet

by their partners for 20 minutes per hour for 5 hours during labor. It was inferred that massage reduced the women's pain, anxiety and also improved their mood (Field, Reif, Taylor, Quintino, Burman, 1997).

A RCT in Taiwan included 60 women who were assigned to experimental and control group. Massage was given three times, once during each phase of first stage of labor (latent, active, and transition) and each lasting for 30 minutes. The partner was educated on giving massage, who later provided massage based on women's need. Pain intensity was rated by nurses using behavioral intensity scale and anxiety by visual analog scale. The findings indicated that pain intensity increased through the progressing phases of labor, yet the massage group had statistically lower pain intensity scores at each phase of labor. Anxiety levels were low only during the latent phase. 87% of women reported that the massage was helpful in providing pain relief and psychological support (Chang, Wang & Chen, 2002).

An experimental study examined the effect of lower back massage during the three phases of cervical dilation. The results demonstrated that though the intervention does not have an impact on pain characteristics of the parturients it can effectively reduce intensity of pain perception during active phase of labor (acceleration and maximum slope) (Leeman, Fontaine, King & Ratcliffe, 2003).

## **2.5. LITERATURE RELATED TO RELAXATION TECHNIQUES**

An interventional study on application of progressive muscle relaxation technique among parturients demonstrated that this technique results in significant pain relief (Paula, Carvalho & Santos, 2002).



A study was conducted among 62 women to determine the effect of relaxation techniques on labor pain. Convenience sampling and random assignment was used. The intensity of pain was determined using numerical rating scale and behavioral reactions using an observational checklist. The result showed a significant difference in intensity of pain and behavioral reactions between the two groups (Bagharpoosh, Sangestani & Goodarzi, 2006).

## **2.6. LITERATURE RELATED TO ACUPRESSURE AND ACUPUNCTURE**

A Japanese study conducted to assess the subjective and objective relief of labor pain using acupuncture among 32 women. The findings demonstrated revealed an improvement of approximately 60% by the 16 primi whereas 90% by the 16 multiparous women. All patients had received systemic sedation (Hydo & Gega, 1977).

In a study conducted to identify the effects of acupuncture, the authors concluded that 19 of the 30 Nigerian parturients receiving sacral acupuncture had adequate pain relief assessed using VAS with no request for any form of analgesia (Umeh, 1986).

An evaluation on use of acupuncture was made among 16 laboring mothers. About 56% reported mild to good pain relief while 81% stated increased relaxation (Yanai, 1987).

Lee et al evaluated the effects of SP6 acupressure on labor pain among 75 women in a double blinded experimental study. Mothers were randomly assigned to SP6 acupressure and SP6 touch control. The results were assessed four times immediately, 30 mins and 60 mins after the intervention using visual analogue scale.

The findings indicated significant differences between the groups in pain scores. The intervention group reported 3 cm cervical dilation of delivery time shorter than the control group (Lee, Chang & Kang, 2004).

A study among 20 women at Dade City found that ice massage of the energy meridian LI4 performed during each contraction carried out over a 30-minute period showed a mean reduction in pain of 25.15 by using the VAS (Waters,1992).

For the first time in 2002 and 2003 three RCTs of acupuncture for pain relief in labor were published including a total of 598 women. Women reported lesser pain during all the three trials(Simkin & Bolding, 2004).

In a randomized controlled study conducted at Sweden among 90 parturients, 46 of them received acupuncture during labor as an alternative to conventional analgesia. There was a decreased need for epidural analgesia, greater degree of relaxation among the users when compared with the control group. Thus the study suggested that acupuncture could be an effective alternative for pharmacological interventions (Ramnero et al 2002).

In a randomized clinical trial conducted by Skilnand *et al.*, a total of 210 parturients were randomly assigned to either real acupuncture or placebo. Pain was rated using the VAS at 30, 60 and 120 minutes after treatment. The experimental group reported lesser need for epidural analgesia and intramuscular pethidine (Skilnand, Fossen & Heiberg, 2002).

Nesheim et al. studied the use of meperidine among the acupuncture users and non users in 3 groups. Meperidine was used by 11% in acupuncture group and 37% in

no acupuncture group and 29% in control group when compared with the acupuncture group (Nesheim, King & Berg, 2003).

An experimental study with pretest and posttest with control group design was conducted among 127 parturients to determine the effect of LI4 and BL67 acupressure on labor pain and uterine contractions during the first stage of laboring women. Participants were randomly assigned to the three groups, each receiving LI4 and BL67 acupressure, light skin stroking, or no treatment/conversation only. Findings interpreted using the VAS and external fetal monitoring indicated that there was a significant difference in labor pain during active phase of first stage of labor. But there was no significant difference in effectiveness of uterine contractions among the three groups (Chung et al, 2003).

A quasi experimental study using one-group pretest posttest design investigated the use of ice massage of the acupressure point LI4 to reduce labor pain during contractions. Assessment was done using Visual Analog Scale and McGill Pain Questionnaire. The participants stated a reduction in pain on VAS. The MPQ ranked after the delivery dropped from distressing to discomforting (Waters & Raisler, 2003).

Qu and Zho studied the efficacy of electro-acupuncture in the relief of labor pain among 36 primiparous in an experimental study. There was a significant difference in the concentration of  $\beta$ -Endorphin P and 5-hydroxytryptamine in the peripheral blood which means that the electro-acupuncture group exhibited lower pain intensity and a better degree of relaxation than the control group (Qu & Zho, 2007).

A clinical trial study among 60 pregnant women in Iran was conducted to identify the effect of ice massage on Hoku point. Participants were randomly assigned to the groups. The intervention lasted for 30 minutes and assessment of before and after pain scores was done by visual analog scale was performed before and after the procedure. The results showed that ice massage of Hoku point reduced the pain significantly among the experimental group than control (Faranak, Maesoomah, Tahmineh, Mohammadtaghi, Mohammad & Fatemeh, 2008).

A systematic review and metaanalysis on acupuncture was carried out to evaluate the evidence for or against acupuncture during labor using 19 electronic databases. Ten RCTs involving use of acupuncture alone or as an adjunct to conventional analgesia for pain relief in labor were considered and 2038 women were included. Acupuncture reduced pain among 11% of women for the first 30 minutes when compared with studies where no pain relief interventions were used. Women receiving acupuncture required less meperidine and other analgesic methods (Cho, Lee & Ernst, 2010).

A systematic review examined the effects of non-pharmacological pain relief strategies for pain management during labor. The RCTs that had a control group in the design were only included. In the Freeman trial (1986) women in the hypnosis group required less pharmacological pain relief and greater satisfaction than control group. In the Borup trial (2009) it was reported that acupuncture during labor reduced the need for pain relief for the intervention group when compared with control group (Abelgas, 2011).

## **2.7. LITERATURERELATED TO NON PHARMACOLOGICAL STRATEGIES**

An exploratory study examined the nature, origin and effectiveness of pain coping strategies used during childbirth among 51 British women. Visual analogue scale, McGill Pain Questionnaire and a semi-structured interview were used for the assessment. Subjects were found to use a range of strategies during labor based on their previous experience. It was found that the total number of strategies used in labor was negatively correlated with levels of labor pain (Niven&Gijsbers, 1996).

## **2.8. LITERATURE RELATED TO CONTINUOUS SUPPORT**

A cross-sectional study in China identified the support of midwives to laboring women, in providing positive labor and childbirth experience among 30 Chinese parturients. Assessment was done after 24 to 38 hours of delivery using Bryanton Adaptation of Nursing Support in Labor Questionnaire. The category of informational support with the specific behaviour of praise was identified as the most supportive. Tangible support such as touching was considered the least helpful behaviour (Holroyd, Icing, Pui-yuk, Kwok-hong&Shuklin, 1997).

An evaluation on the efficacy of the support provided by a Doula during labor in Mexico among 100 first time pregnant women in active phase of labor was studied using a control group. The results indicated that the support by Doulas during labor was associated with a significant reduction in cesarean birth, pitocin administration, shorter labor and less use of epidurals (Trueba, Contreras, Velazco, Lara&Martínez, 2009).

A quasi experimental study was conducted with purposive sampling of 60 primi parous laboring mothers in Thailand to identify the effects of nursing support during labor on labor pain coping behaviors and perception of the child birth experience of first time mothers. The results revealed that the mean coping scores of the experimental group was higher than the control group(Sodsong, 2005).

A Cochrane review assessed the effects of continuous support during labor and effects on mother and baby when compared with routine care. 16 trials involving 13,391 women revealed that women who had continuous support were likely to have shorter labor, vaginal delivery, lesser need of analgesia and reported higher less satisfaction (Hodnett, Gates, Hofheyr & Sakala, 2009).

A descriptive survey was conducted to examine the determinants of nurses intention to practice continuous labor support for women with epidural analgesia in Canada among 97 registered nurses from two birthing units. The findings using multiple regression analyses revealed that nurses intention to provide continuous labor support are lower for women receiving epidural analgesia and are influenced by the perceived social pressures on their unit. Nurses view organizational barriers as important factors influencing their ability to provide continuous labor support (Payant, Davies, Graham, Peterson& Clinch, 2008).

A quasi-experimental study among 114 pregnant women compared the anxiety levels, labor pain, satisfaction with the childbirth experience, duration of first stage of labor, type of delivery, use of Pethidine and the babies Apgar scores at 1 and 5 minutes between women who had a relative present during first stage of labor and those who did not. Four questionnaires and a visual analog scale were used for data

collection. The findings revealed a significant difference in anxiety scores between the experimental and control groups but did not support any positive effect regarding other childbirth outcomes (Chunuan et al, 2009).

A quasi experimental nonequivalent control group pretest- posttest design was used to investigate the effect of one-to-one labor support on labor pain, labor stress response, childbirth experience and neonatal status among 82 primi para. Caring package of one-to-one labor support had three components- Physical support consisted of massage, back pressure, touch, Emotional support by a continuous nurse's presence, acceptance, encouragement and informational support involved teaching breathing skills, relaxation skills and knowledge about the labor process. The experimental group had significantly more positive childbirth experience and lesser labor pain. The umbilical cord arterial blood pH of the experimental group was significantly higher while there was no significant difference between the two groups in neonatal one minute and five minute Apgar scores (Myung & Hur, 2001).

## **2.9. LITERATURES RELATED TO SATISFACTION**

A randomized controlled trial was conducted at Quebec, Canada among 34 randomly assigned parturients to determine the effectiveness of non-pharmacological approaches namely intracutaneous sterile water injections (ISW), transcutaneous electrical nerve stimulation (TENS) and standard care, including back massage, whirlpool bath, and liberal mobilization (MBM) for relief of low back pain during labor. Women rated their sense of control and satisfaction with Labor Agency Scale and Labor and Delivery Satisfaction Index. Intracutaneous sterile water injections were found to be more effective than TENS for relief of low back pain during labor.

There was no significant difference between the three groups in the level of control and satisfaction towards labor and delivery (Labrecque, Nouwen, Bergeron & Rancourt, 1999).

A retrospective study on women's pain experiences within 48 hours of delivery was conducted in Northern Ireland to examine the influence of personal control on women's satisfaction among 100 parturients who had a vaginal delivery previously. The results pointed that feelings of personal control influenced the women's satisfaction with pain relief during labor positively (McCrea & Wright, 1999).

A descriptive correlational study was conducted among 60 low-risk postpartum women with uneventful labor outcomes to identify multiple factors for their association with components of childbirth satisfaction and with total childbirth experience. The Labor Agency Scale, McGill Pain Questionnaire, Mackey Childbirth Satisfaction Rating Scale and a background questionnaire were utilized to gather data. Personal control and having expectations for labor and delivery were significant predictors of total childbirth satisfaction (Goodman, Mackey & Tavakoli, 2004).

A comparative study was done in Belgium and the Netherlands among 611 mothers during prenatal visits to identify the association between child birth satisfaction and place of birth, using two questionnaires. One questionnaire was completed at 30 weeks of pregnancy and other within first 2 weeks after childbirth, at home or in hospital. Mackey Satisfaction with Childbirth Rating Scale was used. An analysis of variance with planned place of birth and maternity-care system showed that women, in both countries, who had planned a home birth, were the most satisfied.



Belgian women had higher satisfaction scores than Dutch women. The study confirmed the multi dimensionality of child birth satisfaction (Wendy & Piet, 2007).

## **2.10. LITERATURE RELATED TO COPING RESPONSE OF LABOR PAIN**

A randomized controlled trial was conducted to test the effectiveness of an educational intervention to improve self-efficacy and coping ability during labor. A total of 133 primiparous women were randomly assigned to the experimental group, who received two 90-minute sessions of the educational programme in between the 33rd–35th weeks of pregnancy. The short form of Chinese Childbirth Self-Efficacy Inventory was used to measure the maternal self-efficacy while evaluation of pain and anxiety during the three stages of labor and performance of coping behaviour during labor were measured by the Visual Analogue Scale and Childbirth Coping Behaviour Scale respectively. The experimental group demonstrated higher levels of self-efficacy for childbirth, lesser anxiety and pain and greater performance of coping behaviour during labor (Ip, Tang & Goggin, 2009).

## **METHODOLOGY**

This chapter describes the research methodology adopted to assess the effect of Non Pharmacological Strategies on labor outcomes among parturients at selected hospitals, Mettupalayam. The following passages discuss in detail the research design, setting, population, criteria for sample selection, sampling technique, variables of the study, development and description of tools, validity of the tool, hypotheses, pilot study, main study and techniques of data analysis and interpretation.

### **3.1. RESEARCH DESIGN**

The approach adopted for the study was quantitative. The research design was Quasi experimental PretestPosttest with control group design.

### **3.2. RESEARCH SETTING**

The study was carried out at two settings namely, the Government Hospital and Supa Hospital, Mettupalayam

Government Hospital, Mettupalayam is an accredited Centre for Emergency Obstetrical and Neonatal Care (CEMONC) which is equipped with a labor room, an operating room, NICU and blood bank facilities with specially trained health personnel for handling emergencies. Total number of deliveries conducted at the Government Hospital, Mettupalayam between June 2010 and June 2011 were 1233 of which 512 were vaginal deliveries. Supa Hospital is a 30 bedded private nursing home which is a Government approved family welfare centre and accounted for around 300 vaginal deliveries between June 2010 and June 2011.

### 3.3. POPULATION

The population included were the parturients in active phase of first stage of labor who fulfill the inclusion criteria.

### 3.4. CRITERIA FOR SAMPLE SELECTION

#### 3.4.1. Inclusion Criteria

Mothers at term gestation.

Mothers with low risk factors.

Mothers in active phase of first stage of labor with cervical dilation of 3-4cm.

#### 3.4.2. Exclusion Criteria

Antenatal women who had either obstetrical or medical complications.

Antenatal women who had previous caesarean section.

### 3.5. SAMPLING

Convenient sample of 24 mothers between the age group of 16 – 30 years were selected for the study. The samples were randomly assigned to experimental and control groups irrespective of the gravidarum. Thus each group constituted 12 members.

### 3.6. VARIABLES IN THE STUDY

#### 3.6.1. Dependent Variables

Labor outcomes including

- (i) Coping response of the parturients
- (ii) Maternal and fetal outcomes
- (iii) Satisfaction of parturients about their birth experience

### 3.6.2. Independent Variable

- (i) Non Pharmacological Strategies

## 3.7. MATERIALS

The tools used for the study composed of the following details:

- i. Demographic data and obstetrical profile developed by the researcher
- ii. Partogram
- iii. Sturrock's Labor Coping Scale (1972)
- iv. Assessment of second, third and fourth stage of labor
- v. Perception of birth scale (Marut& Mercer, 1979)

3.7.1. Demographic data and obstetrical profile: The demographic and data profile were developed by the researcher based on the literature review and opinions of the experts. Interviewing was considered as the most appropriate and objective method for obtaining information on the demographic data and present obstetrical profile of the parturients. Direct questioning technique was followed. The demographic profile comprised of the following items: age, education, occupation, religion, residential area and family type.

The Obstetrical profile included the current information regarding the age at marriage, age at conception, obstetrical score, last menstrual period, gestational age in weeks, expected delivery date and the identified risk factors. While some of the details were interviewed, some were retrieved from the medical records of the mothers because of the variations in the level of awareness.

3.7.2.Partogram:Partogram is a standardized tool, invented by Friedman and modified by WHO. It was adapted for its utility during the monitoring of the progress of labor. The tool's graphical components assist the health care professionals in early detection and easier interpretation of impending complications. The various parameters assessed using the tool includes:

- a. Fetal heart rate
- b. Findings of vaginal examination (amniotic sac and moulding).
- c. Cervical dilation and descent of fetal head.
- d. Strength and frequency of uterine contractions.
- e. Drugs administered.
- f. Maternal vital signs including temperature, pulse, respiration and blood pressure
- g. Urine analysis for protein, acetone and volume.

3.7.3Sturrock's Labor Coping Scale (1972):Coping responses of the parturients during labor were assessed with Sturrock's Labor Coping Scale (1972). The scale was refined from Saltenis (1962) by Sturrock's in 1972. The scale measured coping by identifying five types of behavioral expressions: vocal, non-verbal response, physical response, breathing response, facial expression and verbal expression of attitude. Each behavioral response was scored as 0, 1, 2 based on the expressions.

Administration: Mothers' behavioral responses were assessed before and after the implementation of Strategy I, which has three components and also at the end of each component. The same method was adapted during the implementation of Strategy II and also during the bearing down effort of the mother in the second stage of labor.

Scoring: The response was scored zero when the mother lacks self control and ability to cope with the contraction. One indicates an average coping response and two represents superior coping responses. The composite score, the sum of scores was obtained in each five categories ranges from 0 to 10.

Interpretation: The lowest score points at the lowest level of coping response while the highest scores suggest the highest coping response.

3.7.5. Assessment of second, third and fourth stage of labor: An assessment was made during the second, third and fourth stages of the labor in order to identify the secondary labor outcomes. In the second stage the bearing down efforts was assessed using the Sturrock's labor coping scale. Duration of second stage of labor, medications used and the type of the delivery were also noted. In the third stage the state of perineum, duration, medications used and the APGAR scores were assessed. In the fourth stage the amount of bleeding, initiation of the breast feeding and the medications used were documented.

3.7.6. Perception of birth scale (Marut & Mercer, 1979): Marut and Mercer (1979) identified in their study the differences in perceptions of the birth experience as a result of the psychological and emotional stress experienced. As a result, they developed a 29-item questionnaire from a 15-item attitude questionnaire by Samko & Schoenfeld (1975). The scale was used to assess perceptions about labor and delivery in terms of woman's confidence during childbirth, control, and satisfaction with her labor and delivery and initial contact with the newborn (Marut & Mercer, 1979). Eleven of the items refer to labor, 12 to delivery, 2 to both labor and delivery,

and 3 to the first contact with the newborn after Stressful life events were measured by the Life Experiences Survey (Sarason, Johnson, & Siegel, 1978).

Cronbach alpha coefficient reliability was reported as 0.87 in a study where 294 women participated by Mercer and fellows in 1983.

Administration: The mothers rated their perceptions of the child birth experience using the scale after the fourth stage of labor but within 24 hours.

Scoring: It is Likert-type scale, with a range from 1-5 for each item

For items 1-27: 1 -Not at all    2 –Somewhat    3 –Moderately    4- Very  
5 -Extremely

For items 28, 29: 1- Within eight hours or longer    2- Within four hours  
3- Within two hours    4- Within one hour    5-Immediately

Interpretation: Higher the rating more favorable or positive the experience is viewed.

### 3.8. NON PHARMACOLOGICAL STRATEGIES

Natal formulated four non pharmacological interventions into the two following strategies.

Strategy I: Combined strategies	1 Respiratory exercises 2 Muscle relaxation 3 Lumbo sacral massage
Strategy II: Isolated strategy	1 Shower

For feasibility and adaptability to the Indian scenario, isolated strategy was modified and replaced with ice massage on LI4 acupressure point. The Non pharmacological strategies that were formulated for the study is explained in the following tabulation:

Strategy	Duration	Interventions	Technique
<b>Strategy I</b>  Combined strategies	Active phase of first stage of labor  Cervical dilation 6-8cm	1 Respiratory exercises 2 Muscle relaxation 3 Lumbo sacral massage	<p>Respiratory exercises: The woman is guided to inhale and exhale breathing through the mouth slowly, as the uterine contractions began, in a manner as if she is smelling a rose and blowing a candle.</p> <p>Muscle relaxation: The woman is coached to relax, loosen arms and legs until the contraction lasts.</p> <p>Lumbosacral massage: At the beginning of the contraction, the researcher places her open left hand over the projection of her uterus in the lumbosacral region and massages with circular movements, until the uterine contraction lasts.</p>
<b>Strategy II</b>  Isolated strategy	Transition stage of first stage of labor:  Cervical dilation 8-10cm.	Ice massage on LI4 acupressure point.	Ice is crushed and wrapped in a wash cloth which is placed snugly between the thumb and the fore fingers of the mother at the LI 4 point.



### 3.8.1. Interventional Procedure :

#### *Step I*

The purpose of the present study is explained to the mother in their regional language. Informed consent was obtained from the parturients after explaining the nature of the study. The demographic data and obstetric history are interviewed and recorded.

Parturients are selected as per inclusion criteria and randomly assigned to the experimental and control groups irrespective of the gravid status.

#### *Step II*

The researcher is present with the parturient in the labor room throughout the labor. The progress of labor is monitored using partogram and the same is informed to the mother and the female birth companion.

Timing	Experimental Group	Control group
Selection of sample	<p>Parturients are screened based on the inclusion criteria.</p> <p>When the mother is admitted into the unit and is comfortable, the researcher explains the mother briefly using a written note about the research and consent is obtained.</p>	<p>Parturients are screened based on the inclusion criteria.</p> <p>When the mother is admitted into the unit and is comfortable, the researcher explains the mother briefly using a written note about the research and consent is obtained.</p>

Timing	Experimental Group	Control group
<b>First stage</b>	<p>The progress of the labor is monitored using partogram.</p> <p>When the cervical dilation becomes six cm, the researcher observes the behavioral responses using the Sturrock's labor coping scale.</p>	<p>The progress of the labor is monitored using partogram.</p> <p>When the cervical dilation becomes six cm, the researcher observes the behavioral responses using the Sturrock's labor coping scale.</p>
<b>Strategy I</b>	<p>The mother's behavioural responses are scored during the first observed uterine contraction in a set of five that occurs subsequently.</p> <p>The mother is encouraged to perform muscle relaxation for that set of five uterine contractions.</p> <p>At the end of the fifth contraction the behavioral responses are assessed using Sturrock's labor coping scale.</p> <p>Again the mother's behavioural response is scored during the first observed uterine contraction in a set of five.</p> <p>The mother is provided Lumbo sacral massage.</p>	<p>The mother is monitored for a set of five contractions. The mother's behavioural response is scored during the first observed uterine contraction in a set of five.</p> <p>At the end of the fifth contraction, the behavioral responses are assessed using Sturrock's labor coping scale.</p> <p>Monitoring continues till eight cm of cervical dilatation</p>

Timing	Experimental Group	Control group
Strategy I	<p>At the end of the fifth contraction, the behavioral responses are assessed using Sturrock's labor coping scale.</p> <p>The same intervention is continued in the same sequence till there is progress of cervical dilation upto eight cm.</p>	
Strategy II	<p>When the cervical dilation becomes eight cm, strategy II is implemented.</p> <p>The mother is given ice massage on LI4 acupressure point for a period of 30 minutes.</p> <p>At the end of the fifth contraction, the behavioral responses are assessed using Sturrock's labor coping scale.</p> <p>The same interventions are continued in the narrated sequence till the labor progresses to the second stage.</p>	<p>The mother is monitored for a set of five contractions.</p> <p>At the end of the fifth contraction, the behavioral responses are assessed using Sturrock's labor coping scale.</p> <p>Monitoring continues till ten cm (full) of cervical dilatation.</p>
Second stage of labor	<p>The bearing down effort is assessed using the Sturrock's labor coping scale, along with the duration, medications used and the type of the delivery.</p>	<p>Bearing down efforts are assessed using the Sturrock's labor coping scale, along with the duration, medications used and the type of the delivery.</p>

Timing	Experimental Group	Control group
Third stage of labor	The state of perineum, duration, medications used and the APGAR scores are assessed and recorded.	The state of perineum, duration, medications used and the APGAR scores are assessed and recorded.
Fourth stage of labor	Amount of bleeding, initiation of the breast feeding and the medications used are documented.	Amount of bleeding, initiation of breast feeding and the medications used are documented.

### 3.9. VALIDITY OF THE TOOL

The content validity of the tool was obtained from experts in the field of medicine and nursing and necessary suggestions were incorporated in the tool.

### 3.10. HYPOTHESES

- H<sub>01</sub>: There is no significant difference between the experimental and control group on the labor coping behaviour of the parturients before the Non Pharmacological strategies.
- H<sub>2</sub>: There is a significant difference between before and after the Non Pharmacological Strategies on labor coping behaviour among the experimental group.
- H<sub>03</sub>: There is no significant difference among the control group before and after the Non Pharmacological strategies on labor coping behaviour of the parturients.
- H<sub>4</sub>: There is a significant difference after the Non Pharmacological Strategies between the experimental and control group on labor coping behaviour of the parturients
- H<sub>5</sub>: There is a significant difference after the Non Pharmacological Strategies between the experimental and control group on satisfaction of birth experience.

### **3.11. PILOT STUDY**

A pilot study was conducted in the Labor Ward of Government Hospital, Mettupalayam for a period of 10 days. Convenient sample of four parturients were selected to check the practicability and feasibility of the study. The results revealed higher coping abilities and satisfaction among the experimental group mothers when compared with the control group.

### **3.12. MAIN STUDY**

The main study was carried out at the Government Hospital and Supa Hospital, Mettupalayam, a private nursing home for a period of 30 days. A convenient sample of 24 women in active phase of first stage of labor, with cervical dilation not more than 4 cm were selected, in order to initiate the interventions at the pre-determined stage of active phase of labor. The researcher provided continuous support with the Non Pharmacological Strategies for the experimental group whereas the control group received routine nursing care.

### **3.13. TECHNIQUES OF DATA ANALYSIS AND INTERPRETATION**

Frequency tables were formulated for all significant demographic data. Both descriptive and inferential statistical methods were adopted for data analysis. Descriptive statistics were used for demographic variable analysis while 't' tests were used to find out the effectiveness of the Non Pharmacological Strategies on labor coping among the parturients.

## **DATA ANALYSIS AND INTERPRETATION**

This chapter deals with the methods and techniques used for data analysis and their interpretation. During the active phase of labor, mother's coping responses were assessed and Non Pharmacological Strategies were administered to the mothers, who were randomly assigned to the experimental group. The data was collected and grouped as five sections namely demographic data, partogram, coping responses, assessment of second, third and fourth stages of labor and satisfaction of the birth experience. The data collected were analyzed using descriptive and inferential statistics and presented in the form of tables and figures. The study was conducted among 24 parturients present during the period of data collection in order to assess the effectiveness of Non Pharmacological Strategies on the labor outcomes of the parturients.

### **SECTION – I**

Assessment is the process of gathering and discussing information from multiple and diverse sources in order to develop a deep understanding of we know, understand, and can do with their knowledge as a result of their experiences; the process culminates when assessment results are used to improve subsequent learning (University of Oregon). This section details on the data collected by the researcher as a part of the assessment.

#### **4.1. BASELINE DATA PRESENTATION**

Data was collected from 24 parturients who participated in the study after screening them for the inclusion criteria. The data was collected based on the tool designed by the researcher. The data were tabulated under appropriate headings which facilitated the analysis and the interpretation of the findings in relation to the effect of Non Pharmacological Strategies on the labor outcomes among the parturients.

#### **4.2. DISTRIBUTION OF PARTURIENTS BY DEMOGRAPHIC VARIABLES**

The selected demographic items included in the tool were age, education, occupation, religion, residential area and family type.

**TABLE 4.1**  
**DISTRIBUTION OF PARTURIENTS BY DEMOGRAPHIC DATA**

(N = 24)

<b>Demographic Data</b>	<b>Experimental group</b>		<b>Control group</b>	
	<b>No. of Parturients</b>	<b>Percentage (%)</b>	<b>No. of Parturients</b>	<b>Percentage (%)</b>
<b>Age in years</b>				
16- 20	4	33	4	33
21-25	7	58	6	50
26-30	1	8	2	17
<b>Level of education</b>				
Lower primary	-	-	2	17
Upper primary	1	8	1	8
Secondary	8	67	5	42
Higher secondary	2	17	2	17
Graduation	-	-	1	8
Post graduation	1	8	1	8
<b>Religion</b>				
Hindu	11	92	7	58
Muslim	1	8	4	33
Christian	-	-	1	8
<b>Employment status</b>				
Unemployed	11	92	11	92
Employed	1	8	1	8



Demographic Data	Experimental group		Control group	
	No. of Parturients	Percentage (%)	No. of Parturients	Percentage (%)
<b>Residential area</b>				
Urban	5	42	6	50
Rural	7	58	6	50
<b>Family type</b>				
Joint	2	17	5	42
Nuclear	10	83	7	58

The table 4.1 represents the age distribution of the samples in the study. Experimental group constituted a majority of mothers that is 58% were between 21-25 years of age while 33% of the mothers were among the age group of 16-20 years. The remaining 8% of the mothers were between 26- 30 years of age.

The table represents the distribution of educational status among parturients. Majority of mothers (67%) in the experimental group completed their secondary education while 17% were educated upto higher secondary level. An equal distribution of mothers that is 8% had their upper primary education and others with a post graduate degree. Majority (42%) of the control group comprised of mothers who were educated upto secondary level. In the category of higher secondary and lower primary level of education 17% of the samples were distributed equally. It was found that mothers who had only their elementary education, others who had their graduation and post graduation were equally distributed at 8% among the control group.

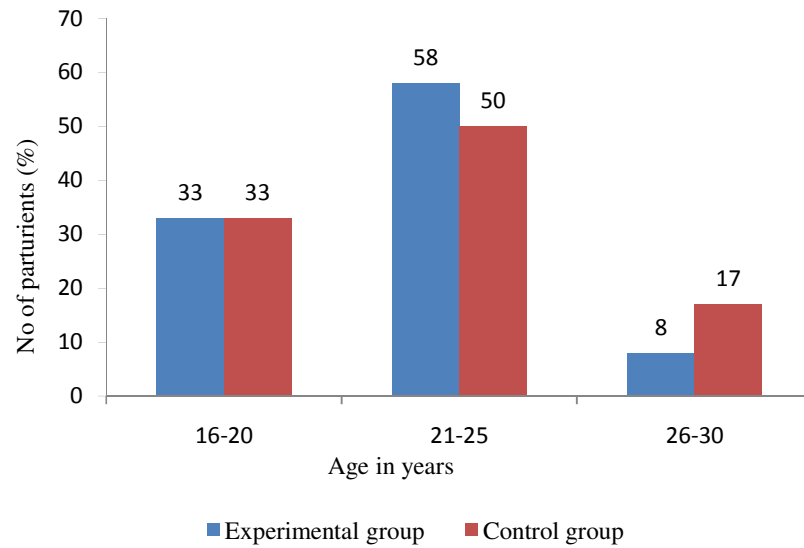
The distribution of mothers based on religion among the experimental group demonstrated that a majority of mothers that is 92% were Hindus while the remaining 8% were Muslims. The control group comprised of 58% of Hindu mothers, 33% of Muslims and 8% of Christians.

It was found that among both the experimental and control group parturients, distribution based on employment was similar. Majority of mothers (92%) were unemployed and the remaining 8% were employed.

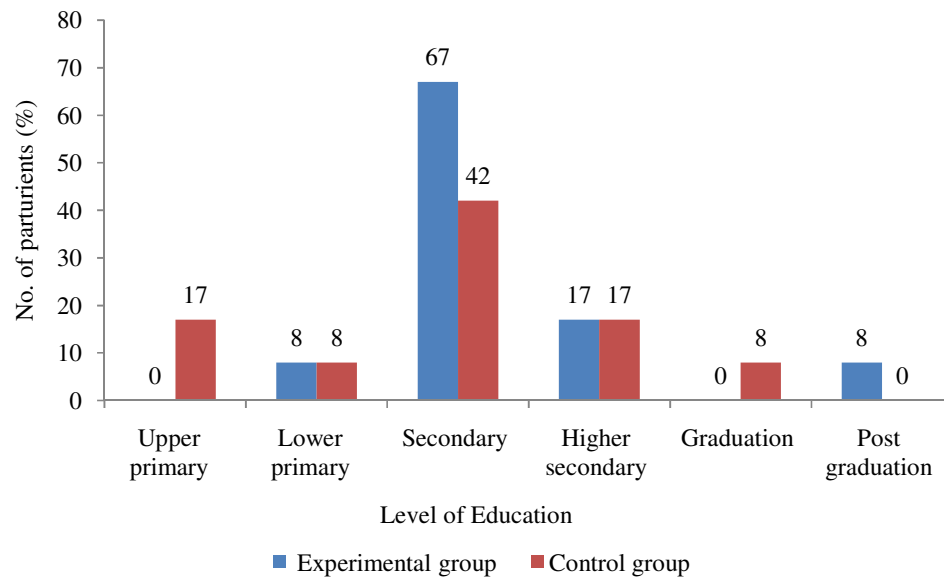
The compiled data indicates that a majority of experimental group that is 58% were residing in the rural area while 42% in the urban area. The control group demonstrated an equal distribution of mothers that is 50% in both the urban and rural residential group of mothers.

The table 4.1 demonstrates that a majority of experimental group that is 83% were residing in the nuclear type of family while 17% were in joint family. The control group demonstrated a majority of 58% in nuclear family 42% in joint family.

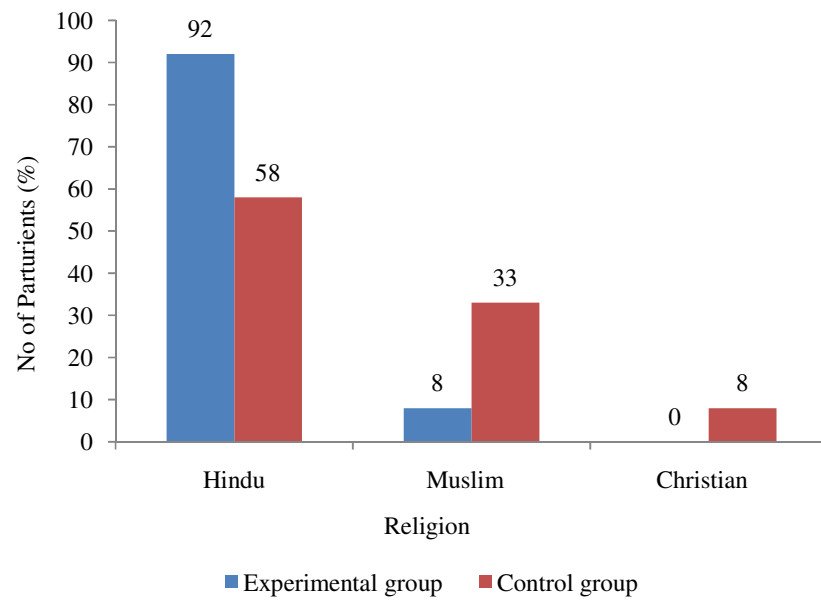
**FIG. 4.1**  
**AGE DISTRIBUTION OF PARTURIENTS**



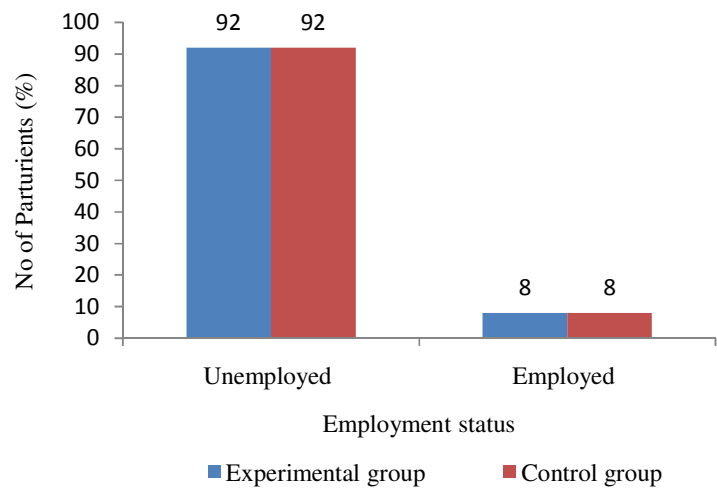
**FIG.4.2**  
**DISTRIBUTION OF PARTURIENTS BY EDUCATION**



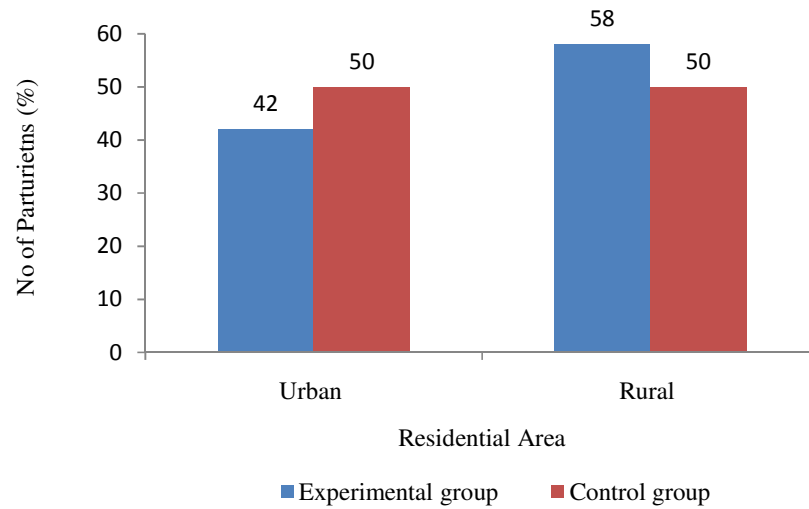
**FIG.4.3**  
**DISTRIBUTION OF PARTURIENTS BY RELIGION**



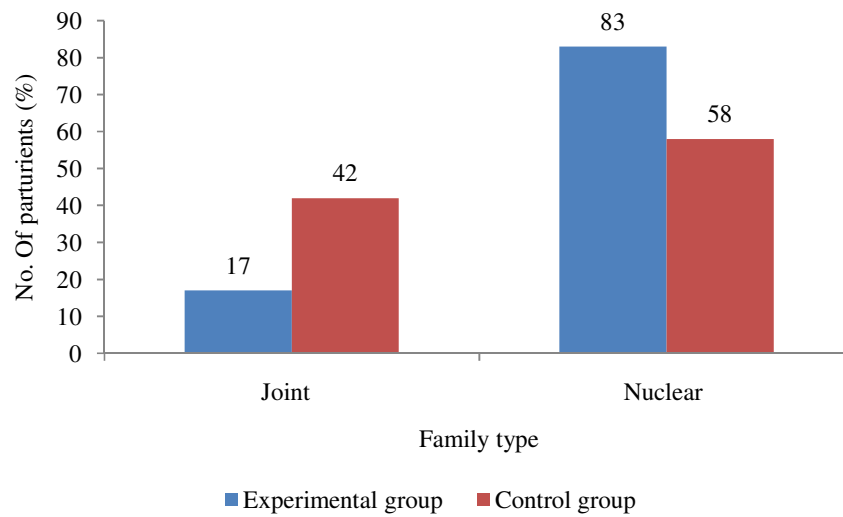
**FIG.4.4**  
**DISTRIBUTION OF PARTURIENTS BY EMPLOYMENT**



**FIG.4.5**  
**DISTRIBUTION OF PARTURIENTS BY RESIDENTIAL AREA**



**FIG.4.6**  
**DISTRIBUTION OF PARTURIENTS BY FAMILY TYPE**



### 4.3. DISTRIBUTION OF PARTURIENTS BY OBSTETRICAL DATA

The obstetrical profile comprised of the details on age at marriage, age at conception, obstetrical score, gestational age and the risk factors identified.

**TABLE 4.2.**  
**DISTRIBUTION OF PARTURIENTS BY OBSTETRICAL DATA**

(N = 24)

Obstetrical profile	Experimental group		Control group	
	No. of Parturients	Percentage (%)	No. of Parturients	Percentage (%)
<b>Age at Marriage</b>				
<b>(years)</b>				
16-20	7	58	9	75
21-25	5	42	3	25
<b>Age at Conception</b>				
<b>(years)</b>				
16-20	3	25	4	33
21-25	8	67	6	50
26-30	1	8	2	17
<b>Gestational Age</b>				
<b>(in weeks)</b>				
37-38	4	33	2	17
39-40	4	33	7	58
More than 40	4	33	3	25

Obstetrical profile	Experimental group		Control group	
	No. of Parturients	Percentage (%)	No. of Parturients	Percentage (%)
<b>Gravid Status</b>				
Primi gravid	7	58	6	50
Multi gravid	5	42	6	50

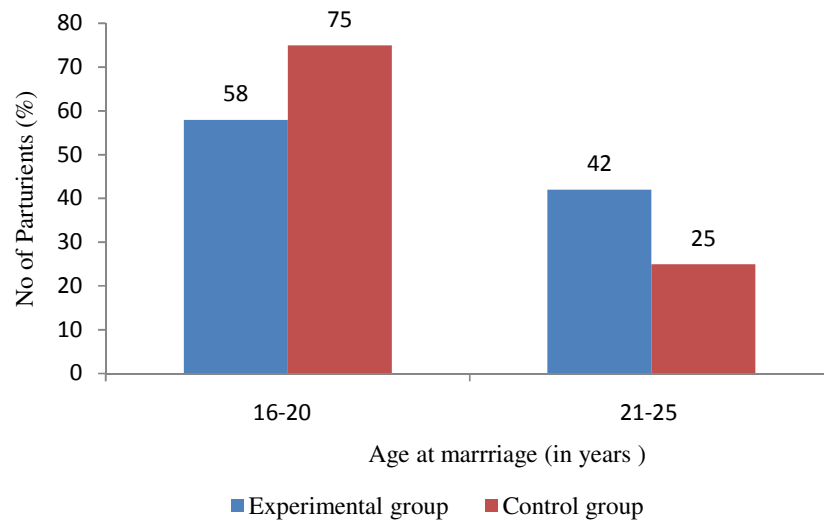
Table 4.2 represents the distribution of samples based on their age at marriage. The majority of mothers in the experimental group that is 58% had their marriages between 16-20 years of age while the remaining 42% were married between 21-25 years of age. Among the control group 75% were married between 16-20 years of age and the remaining 25% got married between their 21-25 years of age.

The tabulated data based on the age distribution of mothers during their current pregnancy reveals the following distribution. In the experimental group, majority of the mothers that is 67% had their conception between 21- 25 years of age while 25% conceived when they were between 16-20 years of age. The remaining 8% had their conception between 26-30 years of age. Among the control group 50% of the mothers had their conception between 21-25 years of age, 33% between 16-20 years of age and the remaining 17% between 26-30 years of age.

The experimental group had an equal distribution of 33% in each of the three categories that is 37- 38 weeks, 39- 40 weeks and more than 40 weeks of gestation. The control group constituted majority of mothers that is 58% with gestational age between 39- 40 weeks. About 25% of mothers labored with more than 40 weeks of gestation and the remaining 17% were with the gestational age 37-38 weeks.

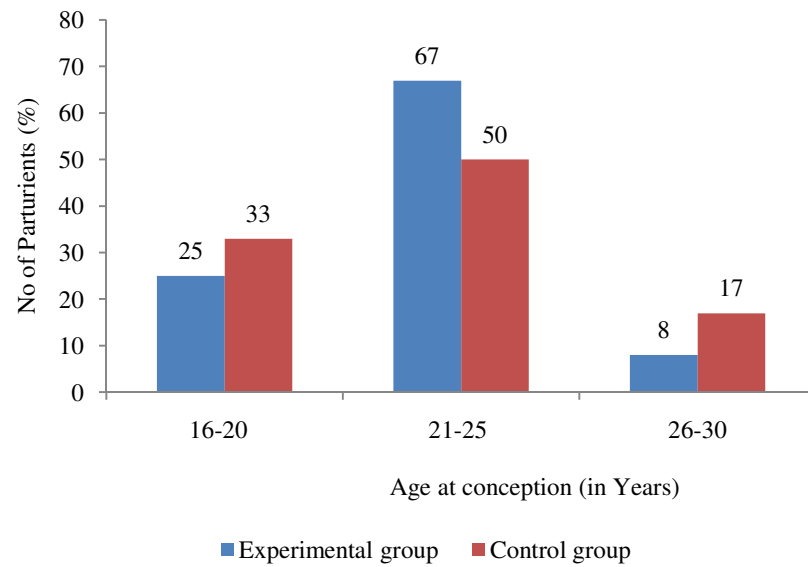
The table outlines the distribution of mothers based on gravid status. In the experimental group majority of the mothers that is 58% were primi gravid and the remaining 42% were multigravid mothers. The control group constituted an equal distribution (50%) of both primi and multi gravid mothers.

**FIG.4.7.**  
**DISTRIBUTION OF PARTURIENTS BY AGE AT MARRIAGE**

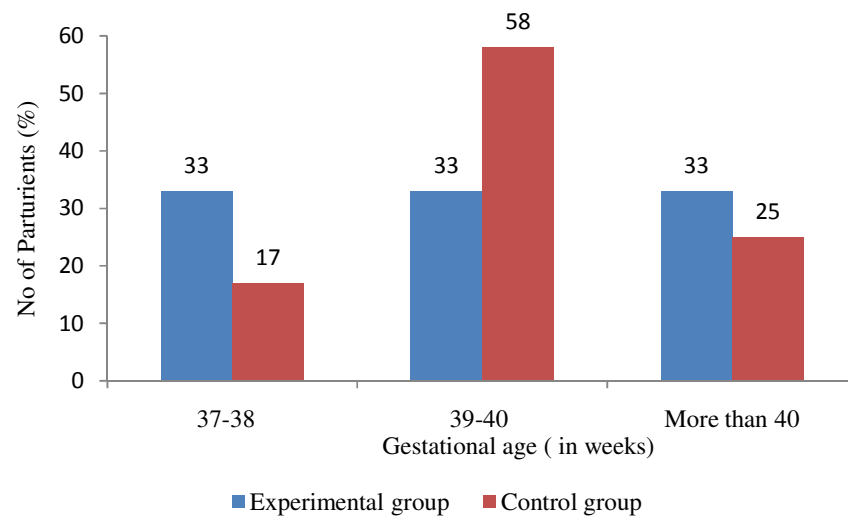




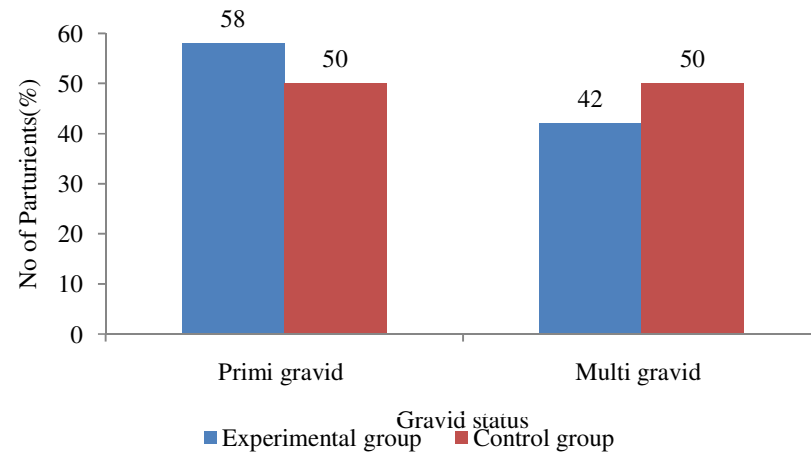
**FIG.4.8.**  
**DISTRIBUTION OF PARTURIENTS BY AGE AT CONCEPTION**



**FIG.4.9.**  
**DISTRIBUTION OF PARTURIENTS BY GESTATIONAL AGE**



**FIG.4.10.**  
**DISTRIBUTION OF PARTURIENTS BY GRAVID STATUS**



## SECTION – II

#### 4.4. ANALYSIS OF LABOR COPING SCORES OF EXPERIMENTAL AND CONTROL GROUPS

‘t’ test was used to analyze the mean difference in labor coping scores of parturients in the experimental and control groups.

**TABLE 4.3.**  
**MEAN SCORES OF LABOR COPING BEHAVIOUR**

(N=24)

Subject group	Number of recordings	Mean		
		Recordings	Pretest scores	Post test scores
Experimental group	67	5.58	4.63	9.44
Control group	67	5.58	4.81	3.70

The table 4.3 illustrates the total number of recordings performed by the researcher while monitoring parturients for their labor coping behaviour. It was found that both the groups had equal number of recordings. The experimental group had a mean pre test score of 4.63 against 4.81 of control group. The mean post test score was 9.44 for the experimental group while the control group had 3.70.

**TABLE 4.4.**  
**ANALYSIS OF PRE TEST LABOR COPING SCORES AMONG**  
**EXPERIMENTAL AND CONTROL GROUP**

(N=24)

Interventions	Pre testMean		SD	‘t’
	Experimental Group	Control Group		
Strategy I				
Respiratory exercises	8.92	6.83	6.12	0.8362
Lumbo sacral massage	5.33	6.75	7.67	0.453
Muscle relaxation	2.92	3.92	4.18	0.586
Strategy II				
Ice massage onacupressure point	1.33	1.75	2.41	0.4269

Unpaired ‘t’ test was used to assess the pre test labor coping scores among the experimental and control groups. The ‘t’ values obtained were found to be lower than the table value of 1.717 at 0.05 level of significance.

**TABLE 4.5.**  
**ANALYSIS OF LABOR COPING SCORES OF EXPERIMENTAL GROUP**  
**PARTURIENTS**

(N=12)

Interventions	Mean		SD		‘t’
	Pretest	Post test	Pretest	Post test	
Strategy I					
Respiratory exercises	8.92	14.55	3.23	6.11	2.1487*
Lumbo sacral massage	5.33	10.66	2.74	4.22	2.7567 *
Muscle relaxation	2.92	8.58	2.68	3.99	5.183 *
Strategy II					
Ice massage on acu pressure point	1.33	4	1.83	3.60	3.977 *

\*0.05 level of significance

Paired 't' test was calculated to identify the influence of non pharmacological strategies on the pre and post test scores of labor coping. The mean score of parturients in the experimental group before providing respiratory exercises was 8.92 which increased to 14.55 after the intervention. The pre test mean score of mothers during lumbo sacral massage was 5.33 while the post test mean score was 10.66. The pre test mean score was found to be 2.92 before providing muscle relaxation, which increased to 8.58 after the intervention. The pre test mean scores was 1.33 against the post test mean score of 4 as a result of Strategy II that is ice massage on acu pressure point during the transition phase of the first stage of labor.

The calculated 't' values were compared with the table value of 1.796 at 11 degrees of freedom at 0.05 level of significance. All the obtained values were higher than the table value. Thus, it is inferred that these strategies elicit a positive difference in the coping of laboring mothers.

**TABLE 4.6.**  
**ANALYSIS OF LABOR COPING SCORES OF CONTROL GROUP**  
**PARTURIENTS**

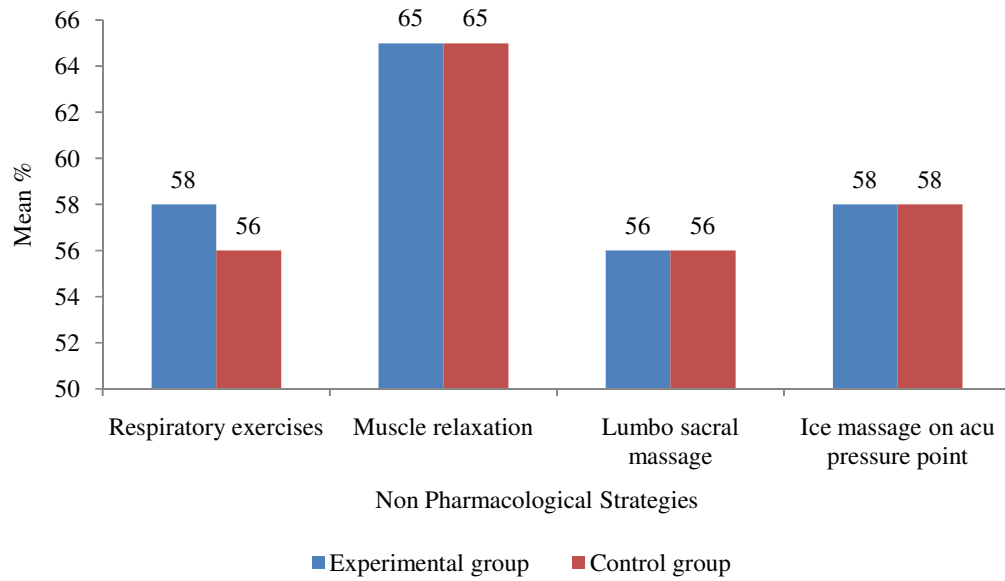
(N=12)

Interventions	Mean		SD		‘t’
	Pretest	Post test	Pretest	Post test	
Strategy I					
Respiratory exercises	6.83	7.17	4.26	3.99	1.3242
Lumbo sacral massage	6.75	4.58	2.80	2.31	1.4795
Muscle relaxation	3.92	2	1.09	1.48	1.5821
Strategy II					
Ice massage on acu pressure point	1.75	1.08	1.21	0.90	1.2415

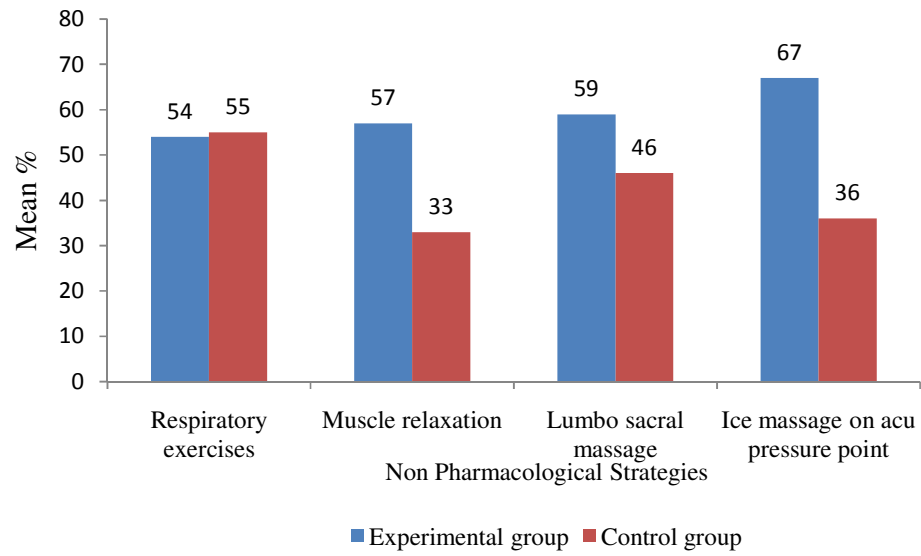
Paired t test was calculated to identify the labor coping scores of mothers in control group during active phase of first stage of labor. The pre test mean score of parturients in the control group was 6.83. while the observed mean of post test score was 7.17 during respiratory exercises. The pre test mean labor coping scores during the Lumbo sacral massage was 6.75 while the post test scores was 4.58. The mean pre test score was 3.92 and post test score was 2 during the muscle relaxation. During the implementation of the Strategy II of Non Pharmacological Strategies, The pre test mean coping score was 1.75 while post test mean score was 1.09. The calculated

't' values were lesser than the table value at 0.05 level of significance. Thus, it is found that there is reduction on labor coping scores among the mothers of control group who received routine nursing care.

**FIG.4.11.**  
**PRE TEST LABOR COPING SCORES OF PARTURIENTS**



**FIG.4.12**  
**POST TEST LABOR COPING SCORES OF PARTURIENTS**





### ANALYSIS OF POST TEST LABOR COPING SCORES AMONG EXPERIMENTAL AND CONTROL GROUP

The post test labor coping scores of both the experimental and the control groups were analyzed using the unpaired 't' test since the scores were of two independent samples.

**TABLE 4.7.**  
**ANALYSIS OF POST TEST LABOR COPING SCORES AMONG**  
**EXPERIMENTAL AND CONTROL GROUP**

(N=24)

Interventions	Mean post test scores		SD	‘t’
	Experimental group	Control group		
Strategy I				
Respiratory exercises	14.55	7.166	4.88	3.265 *
Lumbo sacral massage	10.66	4.583	3.41	4.369 *
Muscle relaxation	8.58	2	3.07	5.256 *
Strategy II				
Ice massage on acu pressure point	4	1.0833	0.97	7.3615 *

\*0.05 level of significance

The above table depicts the obtained 't' value calculated for post test scores of the experimental and the control group. The table value at 22 degrees of freedom at 0.05 level of significance was 1.717. All the obtained values were above the table value thus concluding that the experimental group had higher labor coping scores after the administration of the Non Pharmacological strategies when compared with the control group who received routine nursing care.

#### 4.5. ANALYSIS OF SECOND STAGE PARAMETERS AMONG EXPERIMENTAL AND CONTROL GROUPS

The second stage parameters that were assessed by the researcher included bearing down efforts, duration of second stage of labor, mode of delivery and APGAR scores of the newborn. The following table depicts the data obtained from the parturients.

##### Bearing down efforts

The bearing down efforts of mothers were assessed with Sturrock's labor coping scale in order to rate their behavioural responses. The mean score obtained by the experimental group was 5.75 while that of control group was 3.66.

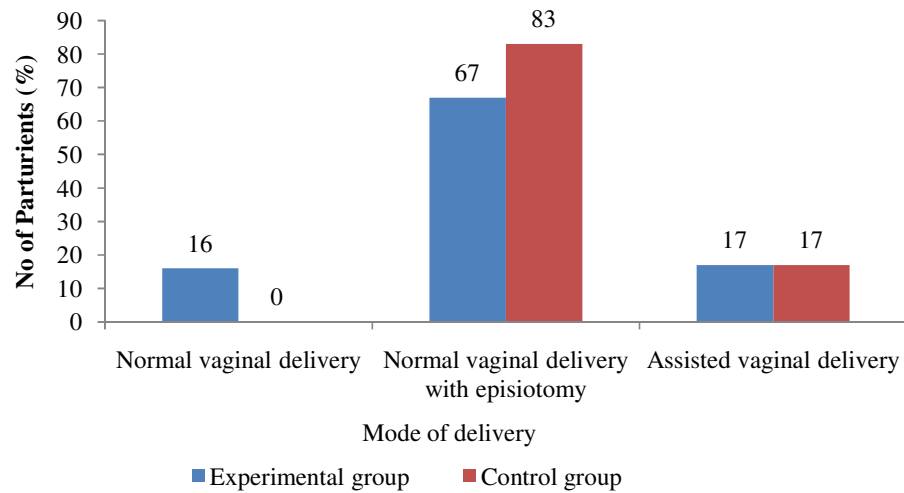
**TABLE 4.8.**  
**DISTRIBUTION OF PARTURIENTS BASED ON MODE OF DELIVERY**

(N=24)

Assessment parameters	Experimental group		Control group	
	No. of Parturients	Percentage (%)	No. of Parturients	Percentage (%)
Normal vaginal delivery	2	16	-	-
Normal vaginal delivery with episiotomy	8	67	10	83
Assisted vaginal delivery	2	17	2	17

Table 4.7 reveals that majority of the experimental group mothers (67%) and control group (83%) underwent normal vaginal delivery with episiotomy, while an equal distribution of mothers (17%) had assisted vaginal delivery in both the groups. In the experimental group 16% of mothers delivered vaginally without the need of episiotomy.

**FIG.4.13**  
**DISTRIBUTION OF PARTURIENTS BASED ON MODE OF DELIVERY**



**TABLE 4.9.**  
**DISTRIBUTION OF PARTURIENTS BASED ON FIRST MINUTE APGAR SCORES**

(N =24 )

APGAR scores	First minute			
	Experimental group	Percentage (%)	Control group	Percentage (%)
Less than 7	1	8	-	-
7	3	25	5	42
8	8	67	7	58

### First minute APGAR scores

From the table 4.9 it is found that, 8% of mothers in the experimental group delivered an asphyxiated new born whose first minute APGAR scores were 7. The score of 7 was obtained by 25% in experimental group and 42% in control group. The score was 8 among majority of the experimental group that is 67% and majority of the control group 58%.

**TABLE 4.10.**  
**DISTRIBUTION OF PARTURIENTS BASED ON FIFTH MINUTE APGAR SCORES**

(N =24 )

<b>APGAR scores</b>	<b>Experimental group</b>	<b>Percentage (%)</b>	<b>Control group</b>	<b>Percentage (%)</b>
7	1	8	-	-
8	2	17	5	42
9	9	75	7	58

### Fifth minute APGAR scores

The score was 7 among only 8% in the experimental group. The score was 8 among 17% in the experimental group and 42% in the control group. The score was 9 among 75% in the experimental group and 58% in the control group.

## 4.6. ANALYSIS OF THIRD STAGE PARAMETERS AMONG EXPERIMENTAL AND CONTROL GROUPS

The third stage parameters that were assessed include the status of perineum, duration and medications used. Frequency tables and mean values were generated for the obtained data.

**TABLE 4.11.**  
**DISTRIBUTION OF PARTURIENTS BASED ON THIRD STAGE**  
**PARAMETERS**

(N =24 )

Assessment parameters	Experimental group		Control group	
	No. of Parturients	Percentage (%)	No. of Parturients	Percentage (%)
<b>Perineum</b>				
Intact	1	8	-	-
Episiotomy	10	83	9	75
Lacerations	1	8	1	8
Tears	-	-	2	17
<b>Medications used</b>				
Oxytocin	6	50	7	58
Methergin	5	42	4	33
Prostaglandin	1	8	1	8

**Perineum**

In the present study, 8% of mothers in the experimental group delivered with intact perineum. Episiotomy was used among 83% of the parturients in the experimental and 75% in the control group. An equal distribution of 8% mothers had lacerations for which suturing was not required in both the experimental and the control groups. Third and fourth degree perineal tears occurred among 17% of mothers in the control group had.

### Medications Used

Majority (42%) of the parturients in the experimental group and 58% in the control received prophylactic dose of Oxytocin 10IU intra muscularly. In the experimental group 42% of the parturients received Methergin (ergometrine) while 33% received the same drug in control group. An equal distribution of 8% received prostaglandins in both experimental and control groups.

### 4.7. ANALYSIS OF FOURTH STAGE PARAMETERS AMONG EXPERIMENTAL AND CONTROL GROUPS

The fourth stage parameters include bleeding, breast feeding initiation and medications used for the mother.

**TABLE 4.12.**  
**DISTRIBUTION OF PARTURIENTS BASED ON FOURTH STAGE**  
**PARAMETERS**

(N =24 )

Assessment Parameters	Experimental group		Control group	
	No. of Parturients	Percentage (%)	No. of Parturients	Percentage (%)
<b>Bleeding</b>				
Normal	10	83	9	75
Moderate	2	17	2	17
Heavy	-	-	1	8
<b>Breast Feeding Initiation</b>				
Within half an hour	5	42	4	33
Within one hour	7	58	8	67

<b>Assessment Parameters</b>	<b>Experimental group</b>		<b>Control group</b>	
	<b>No. of Parturients</b>	<b>Percentage (%)</b>	<b>No. of Parturients</b>	<b>Percentage (%)</b>
<b>Medications used</b>				
Prostaglandins	-	-	1	8
Antibiotics	2	17	1	8

Fourth stage of the labor extends after the delivery of the placenta for the following one hour of the immediate post partum period.

### **Bleeding**

The above table reveals that among the experimental group 83% of mothers had normal limits of vaginal bleeding and 17% of mothers experienced moderate levels of bleeding. Among the control group 75% of them experienced normal limits of bleeding, 17% had moderate levels and 8% experienced heavy bleeding.

### **Breast Feeding Initiation**

In the aspect of breast feeding initiation, 42% mothers from the experimental group initiated the breast feeding within half an hour while 58% mothers initiated within one hour. About 33% of the control group mothers initiated breast feeding within half an hour while 67% mothers initiated within one hour of the delivery.

**TABLE 4.13.**  
**MEAN DURATION OF LABOR**

(N=24)

Stages of labor	Mean Duration (Hours)	
	Experimental group	Control group
Total	8.1	8.7
First stage	7.95	8.38
Second stage	0.31	0.35
Third stage	0.96	0.94

The calculation of total mean duration of labor revealed that the experimental group had total labor duration of 8.1 hours while that of the control group was 8.7 hours. The first stage lasted on an average of 7.95 hours, slightly shorter than the control group for whom it was 8.38 hours. The second stage mean duration was 0.31 for the experimental group while it was 0.35 for the control group. The mean third stage duration was 0.96 for the experimental group while it was 0.94 for the control group.

#### **4.8. ANALYSIS OF MEAN SCORES PERCEPTION OF BIRTH EXPERIENCE**

The satisfaction scores were obtained from the participants using 5 point Likert scale in the aspects of labor, delivery, satisfaction and new born attachment.



**TABLE 4.14.**  
**ANALYSIS OF MEAN SCORES PERCEPTION OF BIRTH EXPERIENCE**

(N =24 )

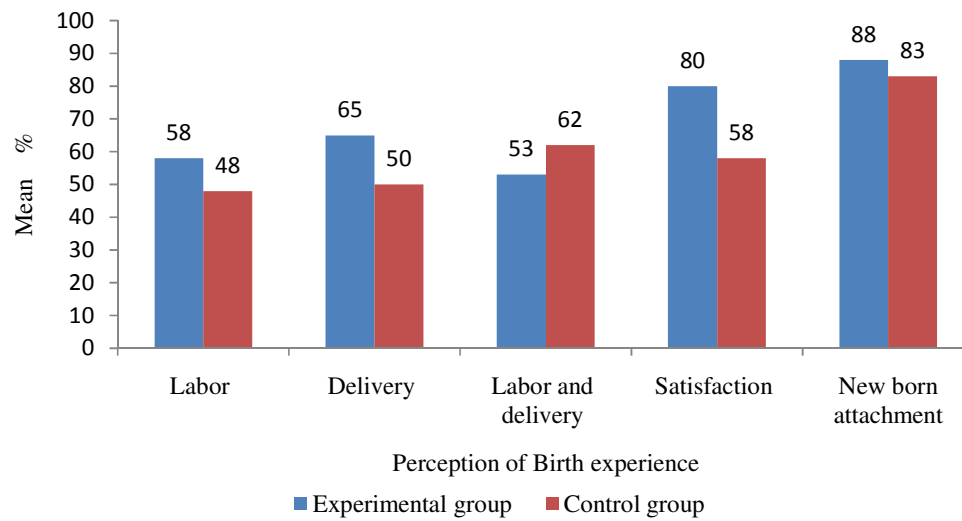
Assessment Criteria	Experimental group		Control group	
	Mean scores	Mean %	Mean scores	Mean %
Labor	32	58	27	48
Delivery	39	65	30	50
Labor and delivery	5	53	6	62
Satisfaction	4	80	3	58
New born attachment	13	88	12	83
Total	93		78	

Perception of birth scale by Marut& Mercer is a 29 item questionnaire based on 5 point Likert scale. It has eleven items related to labor, 12 related to delivery, two related to both labor and delivery, one related to satisfaction and three in relation to the first contact of mother with the newborn.

The findings revealed that experimental group mothers who received Non Pharmacological Strategies had higher mean satisfaction scores that is 93.25 when compared with the control group mothers who had a mean score of 78.42.

The responses categorized under the labor, delivery and satisfaction levels recorded higher mean scores among the experimental group mothers than the control group mothers.

**FIG.4.14**  
**DISTRIBUTION OF PERCEPTION OF BIRTH EXPERIENCE**



**TABLE 4.15.**  
**ANALYSIS OF PERCEPTION OF BIRTH EXPERIENCE SCORES**

(N=24)

Assessment Criteria	Mean scores		‘t’
	Experimental group	Control group	
Perception of Birth experience	93.25	78.42	5.1427*

\*0.05 level of significance

The above table depicts that there is a significant difference calculated among the experimental and control group on the Perception of Birth experience. The result shows that the mean value of the experimental group is higher than the control group. The ‘t’ value is significant at 0.05 level of significance. Hence, the hypothesis **“There is a significant difference after the Non Pharmacological Strategies between the experimental and control group on satisfaction of birth experience”** is accepted. This result is one of the outcome of the interventional effect. The control group obtained lesser mean score when compared to the experimental group due to non exposure to the interventional condition.

### SECTION III

Labor coping behaviour is a multi-dimensional response to labor pain that is influenced by age of the mother, gestational age, educational status, presence of birth companion and many other factors. The following section explains the relationship between demographic variables.

#### 4.9. RELATIONSHIP BETWEEN THE DEMOGRAPHIC VARIABLES AND LABOR COPING SCORES

Karl Pearson's co-efficient of correlation was calculated to identify the influence of the demographic variables on the labor coping behaviour of the parturients.

**TABLE 4.16.**  
**INFLUENCE OF DEMOGRAPHIC VARIABLES ON LABOR COPING**

(N=24)

Demographic Variables	'r'
Age	0.8834
Education	0.7269
Religion	0.9293

The above results represent that there exists a positive correlation between the age, educational status, religion of the parturients, the employment status, family type and their labor coping scores.

**TABLE 4.17.**  
**INFLUENCE OF OBSTETRICAL DATA ON LABOR COPING**

(N=24)

<b>Obstetrical Data</b>	<b>'r'</b>
Age at conception	0.7205
Gestational age	0.7025

The obstetrical profile of the parturients when co related revealed a positive correlation between age at marriage, conception and the gestational age of mothers and their labor coping.

## **RESULTS AND DISCUSSION**

This chapter is a compilation of interpretations on the study results obtained by the researcher and related discussions. The study was conducted at Government Hospital and Supa hospital, Mettupalayam with focus on determining the effectiveness of Non Pharmacological Strategies in relation to the labor outcomes of mothers who underwent these interventions during their labor.

Women who had term gestation, that is more than 37 weeks of gestation and also who fulfilled the inclusion criteria participated in the study. The participants were assisted by the researcher in practicing the Non Pharmacological Strategies which primarily had 2 strategies during first stage of labor. Strategy I which consisted of respiratory exercises, Lumbo sacral massage and muscle relaxation were provided during the active phase of first stage of labor while Strategy II, ice massage on acupressure point LI4 was given during transition phase of first stage of labor. The effectiveness was determined based on the behavioural responses measured as the labor coping scores of the individuals using the Sturrock's labor coping scale, assessment of selected maternal and neonatal indicators during second, third and fourth stages of labor and satisfaction of birth experience rated using Marut and Mercer questionnaire.

### **5.1. DISTRIBUTION OF PARTURIENTS BY DEMOGRAPHIC DATA**

#### **5.1.1. Age**

From the table 4.1 we can interpret that the parturients in the study varied in their age between 16- 30 years of age. Majority of the parturients that is 54 % were of

age group 21 -25 years while 33 % were of the age group of 16- 20 and the remaining 13 % were between 26- 30 years of age.

Stratified analyses of 134,088 white girls and women, 13 to 24 years old, in Utah between 1970 and 1990 was conducted to determine whether a young age confers an intrinsic risk of adverse outcomes of pregnancy. Among white married mothers with educational levels appropriate for their ages who received adequate prenatal care, younger teenage mothers (13 to 17 years of age) had a significantly higher risk than mothers who were 20 to 24 years of age of delivering an infant who had low birth weight, delivered prematurely, small for gestational age. Older teenage mothers (18 or 19 years of age) also had a significant increase in these risks (Fraser, Brockert& Ward, 1995).

The recent Indian National Family Health Survey (NFHS) III in 2005-2006 states that 12 % of women in the age group of 15-19 years are already mothers, 4 % of the same group is pregnant with their first child and on the total, 16 % of them have begun childbearing.

The age distribution in the present study shows that 33 % of the participants were between 16-20 years of age, higher than the national data. The correlation coefficient obtained in relation to the parturients' labor coping scores and the age of the mother was 0.88 which indicates very strong positive correlation.

Age at childbirth is a proven factor that influences the women's health in physiological and psychological aspects. Also pregnancy before attaining sufficient physical maturity may lead to under-development of the reproductive organs and

expose to infections and diseases. It is also found that younger the age at the first pregnancy, the higher the incidence of HIV infections. Younger age of mothers exposes the mother to the risks of high risk pregnancies such as cephalo pelvic disproportion, hypertension complicating pregnancies, birth injuries, under nutrition and anemia. Having a maternal mortality rate of 450 per one lakh live births, India contributes 23 % to the global maternal deaths. Young age pregnancies contribute 13 % among the maternal deaths in India. Medical experts share the view that rates of infant mortality and maternal mortality are high in those aged below 18 years. An analysis of the Census of India revealed that the lower the age at marriage, greater the number of children per married woman in both urban and rural area.

On the other hand, advanced maternal age that is greater than 40 years, compared with younger age, was associated with a significantly higher rate of medical complications (hypertensive disorder and diabetes), instrument-assisted vaginal delivery and cesarean delivery. The incidences of preterm labor, premature rupture of membranes, emergency cesarean delivery, meconium-stained amniotic fluid, small for gestational age newborns, and 5-minute Apgar scores of 7 or lower were not influenced by maternal age (Dulitzki, Soriano, Schiff, Chetrit, Mashiach & Seidman, 1998).

### **5.1.2. Education**

The table 4.2 shows that among the 24 laboring mothers who participated in the study, irrespective of the groups assigned the following pattern of distribution was found. Parturients who had completed their primary education and higher elementary had 8% of the parturients in each of these categories. More than half of the



parturients, that is 54 % had completed their secondary education. Higher secondary education was done by 17 % of the parturients. Graduated mothers were 4% of the samples had their and another 4% had completed their post graduation.

NFHS III data compiled in 2005-2006 indicate the total fertility rate among the Indian population in relation to the educational level of the women. In case of illiterates it was found to be 3.6, those with less than 5 years of education had 2.5 while those with 12 and more than years of education demonstrated 1.8. Mazumdar (1976) states in her review that “Parents prefer to keep their daughters uneducated and get them married even at an early age”. Thus, the above compiled data points that the educational status of the women has implication on the women’s fertility and thereby determines the parity.

### **5.1.3 Religion**

Among the parturients 75 % of the mothers were Hindus, 21 % of the mothers belonged to Islam and the remaining 4 % were Christians.

Schultz (1999) claims that the essence of religion is found in a community of shared beliefs and a common destiny expressed through ritual practices. Religion therefore confers an identity on an individual. Studies involving childbirth narrations portray spirituality as a manifestation of self-actualization (Johnson, Callister, Freeborn, Beckstrand & Huender, 2007). Klassen (2001) concludes that women despite religious or spiritual affiliations try to find a deeper meaning in birth beyond the biological act itself.

A descriptive ethnographic study was conducted among 32 childbearing Muslim women with focus on child birth experience. The audio taped interviews were collected during early post partum weeks and themes were identified. A strong sense of the spiritual dimensions of giving birth within women's traditional, religious, and cultural context was identified (Callister&Khalaf, 1997).

Professor WouterZuurmond practicing at the Kuria Hospice, Amsterdam states that during his practice he found that Muslims wrongly perceived that pain relief measures are that makes one drowsy. By his experience he also concludes that Muslims perceive pain as purifying hence they prefer to suffer with pain.

#### **5.1.4 Employment status**

Among the participants, 92 % of the mothers were unemployed and the remaining 8 % were employed. Unemployment can threaten security, and thus cause fear of the forthcoming childbirth. Young age, low social class, and a low level of education were shown to be risk factors of fear of childbirth (Standley, et al. 1979, Rofe, et al. 1993).

In India, 60 % of poor households sought treatment at private clinics or hospitals and 69 % of poor people's health care expenditure relates to private clinics or hospitals. According to WHO regional advisor Kathleen A. Halloway, majority of Indians spend around 70 % of their income on medicines and healthcare, compared to 30-40 % in other Asian countries like Sri Lanka. A survey by the Indian Institute of Population Sciences and WHO in 6 states also supports the fact that, more than 40 % of low-income families in India have to borrow money from outside the family to meet their healthcare costs. With the concept of institutional delivery, child birth is

also viewed as a situation that necessitates hospitalization. Distance and transport issues in rural areas are highly significant factors affecting women's access to health services, especially emergency care. Financial constraints to transport the mother to higher referral centers are the most commonly contributing factors for the higher maternal mortality and morbidity rates.

Moreover, India is a country with higher birth rates. Among the 94 % of working women who are in the lowly paid, insecure, informal sector (Royston, 1989). Women's workload may affect the intermediate factor of health status increasing risk of maternal death. The last 3 months of pregnancy should be a time when the mother rests and gains weight. However, many women in developing countries continue with their full workload right up until the time of labor, and resume work shortly after giving birth. This can have an extremely detrimental effect on health.

The United Nations (1987) states that there exists an inverse relationship between fertility and employment. It emerges when economic life and social life are structured in such a way that it is difficult to combine both childbearing and employment.

A prospective longitudinal study among 8,556 pregnant women revealed that employed women and housewives differ in their health behaviour (e.g. number of missed appointments, attendance at antenatal classes, smoking) and in their emotional health in pregnancy. Although none of the differences was statistically significant, all of the indices of outcome were slightly more favourable for the housewives than for the employed women.

A study investigated the relationship between income and various types and levels of childbirth preparation utilized by women and also between the preparation and childbirth outcomes among 45 primi women. The findings indicated that women with lower income were less likely to attend childbirth preparation classes and are more likely to acquire information about childbirth from their mothers and reported higher levels of pain during childbirth (Johnston & Robledo, 1998). All these above listed information support the fact that nature of employment is a factor in determining the health of the mother, her access to quality health care and thus the labor outcomes.

#### **5.1.5 Residential area**

Generally, expectations are that urbanization reduces fertility as the cost of living increases. Furthermore, urbanization may be associated with ideational change, that is, a shift from beliefs and attitudes surrounding large families. Furthermore, urban residents may have better access to modern birth control, allowing urban women to more effectively act on any desire to reduce childbearing. But there are controversies also. Urbanization is not expected to markedly affect fertility levels. Fertility is expected to decline as women's role in the labor force activity increases (Visaria & Visaria, 1995).

The National Family Health Survey (NFHS) III in 2005-2006 has identified that on an average each woman in India will bear 2.7 children during her lifetime. It also indicates that the rural women have on an average 0.9 children more than urban woman, thus pointing at the influence of the residing area on the fertility. Most of the parturients in the study that is 54 % were residing in rural settings while the remaining

46 % were residents of urbanized locale. There was a negative correlation established among the samples' labor coping scores and their residential area

#### **5.1.6 Family type**

Table 4.1 demonstrates that a majority of experimental group that is 83 % were residing in the nuclear type of family while 17 % were in joint families. The control group demonstrated a majority of 58 % in nuclear families and 42 % in joint families.

In the extended family, the wife wants to have offspring as early as possible to strengthen the family line and her own status in the household. The authority of the elders continues after marriage; the reproductive behavior of a couple is subject to their influence. Younger age at marriage and lack of privacy contributes to higher fertility (Kim & Shah, 1976). Thus, it is concluded that the nature of family plays a vital role in the fertility of the women.

In a critical analysis conducted by Vlassoff&Vlassoff (1983) where the nuclear and joint families in a village in Western India were based on the changes in relationships at different stages in the family cycle it was concluded that fertility variation based on family type is misleading. When age or stage in the family life cycle is controlled, there is little evidence of any intrinsic connection between fertility and family type.

## **5.2. DISTRIBUTION OF PARTURIENTS BY OBSTETRICAL PROFILE**

### **5.2.1 Age at Marriage**

The data collected for the study also revealed that 67 % of the parturients were married at between 16-20 years of age while the remaining 33 % were married between 21-25 years of age. The NFHS III survey indicates that the median age at first marriage in 2005-06 was 17.8 years among women aged between 25-29. The latest demographic indicators provided by the health and family welfare ministry reveal that the national average age of marriage for girls was 20.6 years in 2008. These figures indicate that the marriage age for females in India is still very low. It is also reported that women who got married at higher ages had less number of children.

### **5.2.2 Age at Conception**

The NFHS III states that the median age at first birth is 19.9 years in India. In the urban it is 20.9 whereas in the rural it is 19.3. In the present study, these samples demonstrated a positive correlation with the labor coping scores. Also the majority of the study samples that is 58 % of the mothers stated that their current conception occurred between 21- 25 years of age while 29 % of them conceived between 16-20 years of age and the remaining 13 % had their conception between 26-30 years of age. Age at conception highly influences the labor outcomes especially when the maternal age is less than 18 years and 35 years and above and with obstetrical and fetal complications.

### **5.2.3. Gestational age**

It is well known fact that the gestational age affects the fetal growth and lung maturity which is crucial for the survival of the newborns. Hence, it is a significant

factor for the women's anxiety and stress level both physiologically and psychologically.

A study was conducted to assess the stress experienced by 50 women treated for premature labor and to examine methods used by the women to cope. Women reported a moderate amount of stress slightly less than the score of women experiencing a "normal" pregnancy (Lowenkron, 1999). Hence in this study, only term gestation mothers, between 37- 40 weeks of gestation, were included.

Majority(46 %) of the parturients in the study labored when their gestational age was between 39-40weeks, 29 % has their gestational age of more than 40 weeks of age and 25 %underwent labor between 37-38 weeks of gestation. This is in congruence with the study conducted by David, Torres &Melo, (2009)to determine the effectiveness of non-pharmacological strategies where 85 % of the participants were between 37 and 40 gestational weeks, and 15 % between 41 and 42 weeks of gestation. The data also revealed a positive correlation of gestational age with the parturients labor coping scores.

#### **5.2.4 Obstetrical score**

The samples demonstrated that 54 % of the parturients were primi mothers while 46 % of them were multi mothers.

An association between women's overall experience of labor and birth and the variety of possible explanatory variables among a group of 1111 women was assessed using a questionnaire in early pregnancy and a follow-up questionnaire 2 months after the birth. Involvement in the birth process and midwife support were associated with a

positive experience; anxiety, pain, and having a first baby with a negative experience. Parity remained a significant predictor, but the others were replaced by augmentation of labor, cesarean section, instrumental vaginal delivery and nitrous oxide (Entonox), which were all associated with a negative birth experience (Waldenstorm, 1999).

A cohort study was conducted among 10,569 women to compare pregnancy complications and outcome among nulliparous, low (1-5) and high (6) parity women. Prevalence of anaemia at booking was reduced in nulliparous compared to multiparous women. Nulliparous women were likely to book early (20 weeks) for antenatal care, have a higher number of visits, fewer home births and had higher risk for low birth weight. Compared to low parity women, nulliparous and high parity women had an elevated risk of hypertensive complications. The risk of developing any pregnancy complications was highest in nulliparous women. In conclusion, nulliparous women had an increased risk of pregnancy complications. High parity women with no previous complicated pregnancy were at low risk of complications (Majoko, Nystrom, Munjanja, Mason & Lindmark, 2004). Hence, it is concluded that parity of the mother influences the labor outcomes. But the samples demonstrated a negative correlation between the gravid status and their labor coping scores.

### **5.3. LABOR COPING SCORES**

At the Helsinki University Central Hospital, it is considered that the first delivery ending up in emergency Cesarean Section was the most important predictor of fear of childbirth during the second pregnancy. Among the fearful women, 15 % stated intolerable pain during their first childbirth as the main reason for their fear and



further 19 % were scared of tearing. These results reflect the difficulties to estimate and treat pain because of its subjectivity and individual differences in pain sensitivity.

Penny describes in his study the ways to measure coping during labor when the mother adopts non pharmacological interventions. Coping means ability to relax during and or between contractions, use of rhythm characterizes their coping style and use of rituals or rhythmic activities with each contraction.

The time period of a set of 5 consecutive uterine contractions was used for the implementation of the strategy. The behavioral responses were obtained at the first uterine contraction as the pre test score and during the following 4 contractions strategies were administered. The behavioral responses during the end of fifth uterine contraction were used as the post test score. Thus labor coping scores were obtained.

The strategy I of the Non Pharmacological Strategies composed of the 3 components namely respiratory exercises, lumbo sacral massage and muscle relaxation. Hence, each component was administered for a set of 5 consecutive uterine contractions. During the administration of the intervention, whenever the researcher was interfered with the unavoidable routines of the parturient like elimination needs and physical examination, uterine contractions were not included. This was done in order to maintain the uniformity in the administration of all the components of the strategy.

Table 4.3 reveals that both the experimental and the control group mothers had a total of 67 recordings. One recording refers to the set of 5 uterine contractions for which the mothers were monitored. The mean pretest score of the experimental group

was 4.63 while it was 4.81 for the control group. The mean post test score was 9.44 for the experimental group while it was 3.70 for the control group indicating that the Non pharmacological Strategies increased the coping of the experimental group mothers.

Table 4.4 explains the pre test labor coping scores among the experimental and control groups. The unpaired 't' test values obtained were found to be lower than the table value of 1.717 at 0.05 level of significance. Hence, the hypothesis **“There is no significant difference between the experimental and control group on the labor coping behaviour of the parturients before the Non Pharmacological strategies”** is accepted.

The table 4.5 shows that the paired 't' test values obtained by the experimental group based on the pre and post test scores were found to be higher than the table value at 0.05 level of significance. Hence, the Non Pharmacological Strategies were found to have an influence in improving the coping behaviour of the experimental group mothers. Therefore the hypothesis **“There is a significant difference between before and after the Non Pharmacological Strategies on labor coping behaviour among the experimental group”** is accepted.

The strategy one is inferred as effective since the 3 components were associated with higher coping scores. The pre and post test of the entire first strategy cannot be used to infer the effectiveness since labor is a physiological process associated with a phenomenon of increasing intensity in terms of the physiological parameters.

The table 4.6 shows that the paired 't' test values were lesser than the table value at 0.05 level of significance. It indicates that the control group mothers' demonstrated decreased coping behaviour as the labor progressed. Hence, the hypothesis **"There is no significant difference among the control group before and after the Non Pharmacological strategies on labor coping behaviour of the parturients"** is accepted.

Table 4.6 detailed the unpaired 't' test values which showed that the obtained values were higher than the table value. Thus inferring that the administration of Non Pharmacological Strategies among the experimental group lead to the increase in coping of the parturients when compared with the counterparts who received only routine nursing care. Therefore the hypothesis **"There is a significant difference after the Non Pharmacological Strategies between the experimental and control group on the labor coping behaviour of the parturients"** is accepted.

Thus, the present study inferred that the labor coping scores among the parturients in the experimental group were higher than the control group mothers.

#### **5.4. ASSESSMENT OF SECOND STAGE OF LABOR**

##### **5.4.1. Bearing down efforts:**

Researchers have compared perineal outcomes between women who used coached pushing compared with those who responded to their own involuntary urges. The practice of routine sustained strenuous bearing down during second-stage labor increases pressure on the pelvic floor which is associated with adverse pelvic floor and perineal outcomes (Hanson, 2009).

The outcomes of 320 unanesthetized low-risk nullipara women at term randomized to groups based on 2 approaches to bearing down were examined. The control group included 163 women randomly assigned to the coached pushing group who were instructed to bear down during the peak of the contraction for 10 seconds. The experimental group included 157 women randomly assigned to the uncoached group who were told to "do what comes naturally" in whichever position the women felt comfortable. Women in the coached pushing group had an average 13-minute shortening of the second-stage labor duration. The authors concluded that coached pushing offers only a slight advantage in shortening second-stage labor at the more significant risk of deleterious urodynamic and pelvic floor outcomes (Bloom, Casey, Schaffer, McIntire&Leveno, 2006).

The mean scores for bearing down effort of the mothers using the Non Pharmacological Strategies during the second stage of labor was found to be 5.75, which was higher than the mean score of the control group (3.66).

#### **5.4.2. Mode of delivery:**

The NFHS III data reveals that in India 9 % of live births in the past 5 years were delivered by cesarean section and 16 % of first births were delivered by a cesarean section. It was identified by the survey that the rate of Cesarean section increases sharply with women's education and wealth. It was also found that cesarean sections are almost twice as common for deliveries in the private sector as in the public sector: 28 vs. 15 % (NFHS III, 2005-2006).

Fear of vaginal childbirth is common and the number of women requesting cesarean section because of their fear is increasing (Ryding 1991, Mould, et al. 1996,

Eftekhar& Steer 2000). Although many professionals agree with the woman's right to choose the mode of delivery, the FIGO committee for the Ethical Aspects of Human Reproduction and Women's Health recommends obstetricians not to perform cesarean section without medical indication (Schenker&Cain 1999).

Prospective cohort study was conducted to determine the factors that predict women's perceptions of the childbirth experience and to examine whether these vary with the type of birth a woman experiences among 650 women. It was found that out of the 20 predictors of women's childbirth perceptions, the strongest were type of birth; degree of awareness, relaxation, control, helpfulness of partner support and being together with the infant following birth (Bryanton, 2008).

Among the present study parturients majority of the mothers (67 %) delivered vaginally with use of episiotomy in the experimental group while it was 83 % in the control group. An equal distribution of 17 % mothers in both the experimental and control group delivered with operative interference like forceps delivery.

Rouse et al (2009) found in their study to assess maternal and perinatal outcomes as a function of second-stage labor duration that as the duration of the second stage increased spontaneous vaginal delivery rates declined from 85 % when the duration was <1 hour to 9 % when it was > or =5 hours. Adverse maternal outcomes that were associated significantly with the duration of the second stage of labor included chorioamnionitis, third or fourth degree perineal laceration (overall rate, 8.7 %) and uterine atony (overall rate, 3.9 %). Among individual adverse neonatal outcomes, only admission to a neonatal intensive care unit was associated significantly with second stage duration.

A prospective cohort study of 393 women with term, singleton, cephalic pregnancies who required instrumental vaginal delivery in theatre or cesarean section at full dilatation found that an increased risk of urinary incontinence persisted up to 3 years following instrumental vaginal delivery and greater prevalence of dyspareunia (Bahl, Strachan & Murphy, 2005).

#### **5.4.3. APGAR scores**

The retrospective cohort study of 15,759 nulliparous, term, cephalic, singleton births at San Francisco between 1976 and 2001 concluded that the length of the second stage of labor was not associated with poor neonatal outcome but with increased maternal morbidity and operative delivery rates.

8 % of mothers in the experimental group delivered an asphyxiated new born whose first and fifth minute APGAR scores were 6 and 7 respectively due to meconium stained liquor. Cohen's (1977) review of 4403 nulliparous women's obstetric data to analyze whether the duration of the second stage of labor influences perinatal outcome or maternal puerperal morbidity found that an increase in the incidence of low 1-minute Apgar scores was observed only in those infants who were not monitored. But in the cause of asphyxia in this mother was attributed to prolonged first stage duration, poor bearing down efforts and use of oxytocics.

### **5.5. ASSESSMENT OF THIRD STAGE OF LABOR**

#### **5.5.1. Perineum:**

A systematic review on Medline database was performed between 1980 and 2005 among 177 articles found that the routine use of episiotomy did not prevent severe perineal tears. The risk of severe perineal tears during episiotomy increased in

the following circumstances: primiparity, Asian women, perineal length less than or 3cm, forceps or vacuum-assisted deliveries and macrosomia(Tayrac, Panel, Masson&Mares, 2006). In the present study only one mother in the experimental group delivered with intact perineum. Episiotomy was used among majority of the parturients 83 % in the experimental and 75 % in the control group. An equal distribution of 8 % mothers had lacerations for which suturing was not required in both the experimental and the control groups. Third and fourth degree perineal tears occurred among 17 % of control group mothers.

#### **5.5.2. Medications used:**

A cochrane review conducted to examine the effect of prophylactic dose during the third stage of labor on maternal and neonatal outcomes concluded with strong suggestions of benefit for oxytocin in terms of postpartum hemorrhage and the need for therapeutic oxytocics than ergometrine but there also existed a risk of increased need for manual removal of the placenta(Elbourne, Prendiville, Carroli, Wood&McDonald,2001). In support to the literature majority (54 %) of the parturients received prophylactic dose of Oxytocin 10IU intra muscularly. 38 % of the parturients received Methergin (ergometrine) and 8 % received prostaglandins.

### **5.6. ASSESSMENT OF FOURTH STAGE OF LABOR**

#### **5.6.1. Bleeding:**

Bleeding was normal among 83 % of the experimental group mothers while in the control group it was 75 % mothers. Moderate levels of bleeding were present

among 17 % of the mothers in both the groups. There was heavy bleeding in 8 % of the control group mothers.

An experimental study was conducted by Neeta in 2009 to assess the effectiveness of early breast feeding on duration of third stage of labor among intranatal mothers. It was found that the experimental group had less amount of blood loss in third stage of labor and hence recommended early breast feeding to reduce the duration of third stage of labor and blood loss in third stage of labor (Neeta, 2009).

#### **5.6.2. Breast feeding initiation:**

Among the experimental group mothers, 42 % of them initiated breast feeding within half an hour while in the control group it was 33 %. Breast feeding initiation was done within one hour by 58 % of the mothers in the experimental group and 67 % in the control group.

Though there are evidences of advantages of early breastfeeding on vaginal bleeding the practices remain contrary. A cohort study among 206 women to describe breastfeeding experiences following a significant postpartum hemorrhage (PPH) found that only 52 % of mothers who intended to either fully or partially breastfeed were able to give their baby the opportunity to suckle within an hour of the birth. Delays were longer in women with greater estimated blood loss. Women who were able to give opportunity to babies to suckle within 2 hours of birth were more likely to fully breastfeed (Thompson, Heal, Roberts & Ellwood, 2010).



### **5.6.3. Medications used:**

One of the parturient in the control group was prescribed prostaglandins for heavy bleeding. 2 among the experimental group and one among the control group mothers were administered antibiotics as prophylaxis for infection.

A study was conducted among 20 term infants grouped into 4 as first vaginal delivery, later-born vaginal delivery, firstborn emergency cesarean and later-born repeat cesarean section to determine the association between the method of delivery and neonatal behavior, parental behavior, parental perceptions and mother-newborn interaction. Multivariate analyses performed on the method of delivery, by sex of infant, by birth order design and the results indicated no significant differences in the infant behavior, parental perceptions of infant behavior, or mother-infant interaction. There was a significant effect for birth order and State scores, with mothers of firstborn infants exhibiting less optimal transitory anxiety scores (Kochanevich, Fawcett, Meek & Simons, 1988).

### **5.6.4. Mean duration of labor:**

A quasi experimental study was carried out to determine the effect of integrated pain management program on labor pain, duration of first stage of labor and childbirth experience among 60 primi parous women. The findings revealed that the experimental group had lower mean pain scores in active and transition phase of first stage of labor and shorter duration of labor (Promrak, 2004). It is a well known fact that these non pharmacological pain relief interventions also influence the duration of labor. The present study results are also consistent with these facts indicating slight shorter first and second stage duration among the experimental group. Prolonged

second stage was also associated with a high rate of vaginal delivery and high rate of maternal morbidity (Myles&Santolaya, 2003). The duration of third stage is significant in determining the bleeding levels of the mothers. The experimental group had 0.96 hours of mean duration while the control group had 0.94 hours. Variation in duration may also be related to the techniques adopted for removal of placenta by the health care professional involved in providing the direct care to the parturients.

### **5.7. PERCEPTION OF BIRTH SCALE (MARUT&MERCER, 1979)**

The findings of present study revealed that the experimental group mothers perceived higher satisfaction level when compared with the counterparts in the control group.

The ratings in the Likert scale indicated that in the aspects of labor, delivery and satisfaction of the birth experience, the experimental group mothers voiced their perception of higher satisfaction levels. However there was also a slightly higher level of satisfaction in relation to the labor, delivery process and newborn attachment among the experimental group when compared with the control group.

### **CONTINUOUS SUPPORT**

An exploratory study during July 2009, in Nepal investigated the husbands' experiences of supporting their wives during childbirth using semi-structured interviews. The twelve first-time expectant Nepalese fathers who were interviewed within 7 days of the birth revealed that they tend to experience overwhelming emotional feelings in the labor room when they attended the childbirth without prior preparation (Sapkota., Kobayashi &Takase, 2010).

An experimental study determined the effects of fathers' attendance to labor and delivery on the experience of childbirth. Fifty primigravid low-risk women and their partners were included for the study who were randomly assigned to experimental and control groups. The data collected using the Perception of Birth Scale and Father Interview Form revealed that women had more positive experiences in all aspects of childbirth with the fathers' support (Gungor&Beji, 2007).

It was found that among the mothers who received social support had the following benefits to the newborn babies. Babies have fewer 5-minute Apgar scores that are less than 7, are less frequently admitted to neonatal intensive care units, are more likely to be discharged within 48 hours, display more maternal-infant interaction behaviours and have higher breast feeding initiation and duration rates (Penny, 1995).

An experimental study was conducted among 95 primiparas to assess the effects of the empowerment and Continuous support using interview and observation techniques. Results showed that the experimental group had higher mean scores for self-efficacy, anxiety, labor pain, pain coping behaviors, satisfaction level of child birth experience significantly different from those of laboring women in the control group. However, data for the laboring women in the experimental group revealed that those mean scores for self-esteem, length of labor and Apgar scores were not significantly different (Boonpongmanee, Chunuan&Somsap, 2005).

## **SUMMARY AND CONCLUSION**

Objective of this study was to assess effectiveness of Non Pharmacological Strategies on labor outcomes of parturients. Labor is a stressful phenomenon which requires the mother to expend tremendous energy of self and also utilization of available resources in pursuit of better labor outcomes. Science and experience have proven that this natural phenomenon is highly unpredictable and volatile in nature. Hence this event is always experienced with anxiety which is a major deterrent of labor outcomes. All these explanations substantiate the utilization of proven effective resources that are implemented effectively at an affordable cost and accessible by these laboring women.

Non Pharmacological Strategies are tailored, understanding the physiology of normal labor. The Strategies, that are part of the intervention focus on the concept of decreasing pain perception by distraction, relaxation and tactile stimulation. Continuous support by the researcher is also an active component of the intervention.

The conceptual framework of the study was based up on Modified Widen Bach's Helping Art Clinical Nursing Theory (1964). The study evaluated the effectiveness of Non Pharmacological Strategies using the tool stated in the previous chapters.

Extensive review of literature was done on the child birth experience of women in order to identify the trends in the areas of labor pain management, use of non pharmacological methods including breathing techniques, touch and massage,

relaxation techniques and acupressure and acupuncture, pain management strategies, satisfaction of child birth experience and continuous support.

The current study was adapted from a similar study conducted using Non Pharmacological strategies in Brazil among 100 parturients. The researcher modified the original strategies of the intervention based on the literature support of other studies and to be feasible to Indian settings. Thus, the Non Pharmacological Strategies were carried out at Government hospital and Supa hospital at Mettupalayam.

Quantitative approach was adopted by the researcher. Pre testPost test with control group was considered the appropriate design in view of the extraneous factors that were interwoven with the study variables. Convenient sampling and random assignment was used. Samples were selected based on the enlisted inclusion criteria of the study. The total number of parturients available during the study period was 42 yet only 24 were included for the study due to the interventional demands like continuous monitoring and support for the mothers. There were instances when some of the parturients initially included for the study had to withdraw on account of emergency cesarean section due to inevitable intrapartum complications like meconium stained liquor, fetal distress and non progress of labor.

On admission mothers were screened for the inclusion criteria. Informed consent was obtained from the selected subjects after a brief explanation of the study and intervention. One female relative was allowed in line with the institution policy along with the researcher. Mother was coached during the labor with the interventions and responses were rated using theSturrock's labor coping scale. Labor progress was monitored with partogram while assessment of the second, third and fourth stages of

labor was performed as per as the tool designed for the study. Perception of the mothers regarding their satisfaction of the experience was collected using Marut and Mercer questionnaire. The findings indicated that Non Pharmacological Strategies were effective in increasing coping ability and also the satisfaction of the birth experience among parturients.

### **6.1. MAJOR FINDINGS OF THE STUDY**

1. Non Pharmacological Strategies were effective, in assisting the parturients of the experimental group, improve their coping ability during the first stage of labor when compared with their counterparts in the control group.
2. The parturients of the control group experienced a decrease in their coping ability as the labor progressed.
3. Theunpaired‘t’ test for the pre test scores among experimental and control groups revealed that the experimental and control group mothers had similar coping behaviour before the initiation of Non Pharmacological strategies.
4. The paired‘t’ test calculated for the pre and post test scores of the control group revealed that the parturient’s coping behaviour decreased as the labor progressed.
5. The paired‘t’ test calculated for the pre and post test scores of the experimental group parturients revealed that all the strategies were found to be effective.
6. The unpaired‘t’ test for post test scores among experimental and control groups revealed that Non Pharmacological strategies were found to be effective.

7. The three components of strategy I was found to be effective. Hence it is inferred that strategy I was effective. Labor is a phenomenon that gradually increases in intensity which makes the comparison of the components over the other impossible.
8. The researcher appreciated better bearing down efforts by experimental group mothers, that is 5.75 when assessed using Sturrock's Labor Coping Scores while the control group had a mean of 3.66.
9. The experimental group mothers had higher mean satisfaction scores that is 93.25 when compared with control group mothers who had a mean score of 78.42. Experimental group mothers perceived higher satisfaction in the aspects of labor, delivery and satisfaction levels than the control group mothers.
10. The unpaired 't' test using the ratings of Perception of Birth experience between the experimental and the control group revealed that the parturients in the experimental group had higher satisfaction scores than the control group.

## **6.2. LIMITATIONS OF THE STUDY**

1. Effectiveness of Non Pharmacological Strategies was established only in coping behaviour not on pain management.
2. Behaviour pattern of the women could not be controlled in between the contractions especially when the next intervention of the strategies were provided.
3. Only behavioral responses during a set of five contractions were considered. Emotional responses like crying, verbal expressions during the uterine contractions were not rated using the tool since they were not monitored.

### **6.3. RECOMMENDATIONS**

1. Nurse midwives should be trained to implement Non Pharmacological strategies.
2. Being a cost effective method with no special requirements for implementation non professionals like trained dais, health assistants, ASHA's and even family members can be trained to provide the intervention.
3. A similar study can be conducted as a clinical trial with control group with large samples.
4. Similar studies with alternative strategies and non pharmacological methods can be conducted to identify the better options for parturients.
5. A structured teaching programme can be conducted in the last trimester to mothers about Non Pharmacological strategies.
6. Studies can be conducted to assess the effects of Non Pharmacological Strategies in comparison with pharmacological interventions like epidural anesthesia.

### **6.4. NURSING IMPLICATIONS**

The study has identified major implications in all the aspects of nursing namely clinical practice, administration, education and research.

#### **6.4.1. Nursing Education**

Management of a parturient is a complex topic for nursing students chiefly because of the need for personalized attention in the aspects of physical needs, comfort needs and pain management. The concept of Non Pharmacological Strategies



encourages use of non pharmacological methods based on the changing physiology inherent to laboring process. This helps them to develop a positive attitude towards the complementary and alternative therapies which is the global trend in nursing and midwifery. This emphasizes the concept of holistic approach and also provides them with options of autonomy in implementation, decision making and caring.

#### **6.4.2. Nursing practice**

Nurse midwives with their previous knowledge and experience usually suggest the mothers to adopt measures like deep breathing and relaxation. Non Pharmacological Strategies channelize these suggestions with evidences of clinical experience into clinical practice. Non Pharmacological Strategies require a minimal amount of training for nurse midwives in order to be successfully integrated into practice.

#### **6.4.3. Nursing Administration**

Non Pharmacological Strategies can be translated or integrated into the existing labor room protocol thus reinforcing the implementation of interventions. Efforts should also be made in order to allocate necessary human resources if the practice of continuous support by professionals is made. This will bridge the need of complementary therapies in hospital settings which are known for pharmacological remedies.

#### **6.4.4. Nursing Research**

Though the aspect of labor pain management is a well researched aspect in obstetrics still it remains the most challenging area due to the dynamics and

complexity of the process. Hence Non Pharmacological Strategies should be further experimented with clinical trials for more concrete findings.

Complementary and alternative therapies have no dearth for options. Hence the study should be replicated with newer strategies and also against pharmacological methods for better labor outcomes and satisfaction of parturients.

## **6.5. CONCLUSION**

The study was carried out to identify the effect Non Pharmacological Strategies on labor outcomes of the parturients. Most of the women (86%) showed higher coping ability during first stage of labor and 57% of women showed higher satisfaction level of child birth experiences. Hence, the intervention was found to be effective in promoting labor outcomes.

## ANNEXURE – I

### PAIRED t- test

Paired 't' test was applied to test the hypotheses, when the scores of the same group, either experimental and control group were used to identify the effect of Non Pharmacological strategies.

$$t = \frac{\bar{d}}{\frac{SD}{\sqrt{n}}}$$

$$SD = \sqrt{\frac{\sum (d - \bar{d})^2}{n}}$$

$$\bar{d} = \text{Mean of difference of the pre and post test scores}$$

$$SD = \text{Standard deviation of the group}$$

$$n = \text{Number of mothers in the group}$$

## ANNEXURE –II

### UNPAIRED t- test

Unpaired ‘t’ test was applied to test the hypotheses when the significant difference between the scores among the experimental and control group were obtained used to identify the effect of Non Pharmacological strategies.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S} \sqrt{\frac{n_1 n_2}{n_1 + n_2}}$$

$$S^2 = \frac{\sum (X_1 - \bar{X}_1)^2 + \sum (X_2 - \bar{X}_2)^2}{n_1 + n_2 - 2}$$

Where,

$\bar{X}_1$  = Mean of the pre test or post test scores of the experimental group

$\bar{X}_2$  = Mean of the pre test or post test scores of the control group

$n_1$  = Pre test or post test scores of the experimental group

$n_2$  = Pre test or post test scores of the control group

$S$  = Combined standard deviation

### ANNEXURE – III

#### KARL PEARSON'S COEFFICIENT OF CORRELATION

This was calculated to find out the influence of independent variable on dependent variable. Influence of the demographic data and obstetrical data on the labor coping behaviour was assessed using the following formula:

$$r = \frac{\frac{\sum xy}{n} - \bar{x}\bar{y}}{SD_x \cdot SD_y}$$

$\bar{x}$  = Mean of pre test scores of the participants

$\bar{y}$  = Mean of the selected variable

$\frac{\sum xy}{n}$  = Average of the pre test score and selected variable

$SD_x$  = Standard deviation of the pre test scores of the participants

$SD_y$  = Standard deviation of the selected variable

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